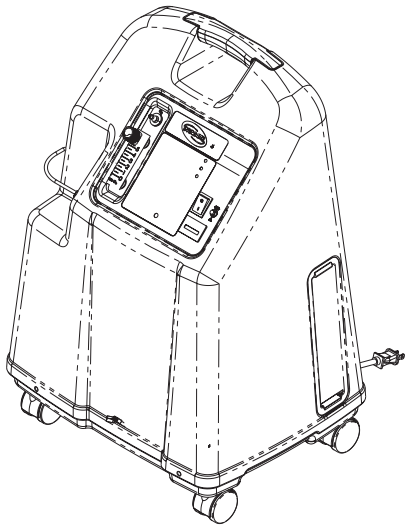
Service Manual

Platinum™ Series

Platinum 5
Platinum 10
Platinum XL - 5 Liter
Oxygen Concentrator



Model IRC5LX, IRC10LX (HomeFill™ II Compatible)
Model IRC5LXO_2, IRC10LXO_2 (With SensO_2® and HomeFill™ II Compatible)

DEALER: Keep this manual. The procedures in this manual **MUST** be performed by a qualified technician.

For more information regarding Invacare products, parts, and services, please visit www.invacare.com

INVACARE®

Yes, you can.™

⚠ WARNING

DO NOT OPERATE THIS EQUIPMENT WITHOUT FIRST READING AND UNDERSTANDING THIS MANUAL. IF YOU ARE UNABLE TO UNDERSTAND THE WARNINGS, CAUTIONS, AND INSTRUCTIONS, CONTACT INVACARE TECHNICAL SERVICES BEFORE ATTEMPTING TO USE THIS EQUIPMENT - OTHERWISE SERIOUS INJURY OR PROPERTY DAMAGE MAY RESULT.

ACCESSORIES

There are many different types of humidifiers, oxygen tubing, cannulas and masks that can be used with this device. You should contact your local home care provider for recommendations on which of these devices will be best for you. They should also give you advice on the proper usage, maintenance, and cleaning.

⚠ WARNING

Invacare products are specifically designed and manufactured for use in conjunction with Invacare accessories. Accessories designed by other manufacturers have not been tested by Invacare and are not recommended for use with Invacare products.

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SPECIAL NOTES

Signal words are used in this manual and apply to hazards or unsafe practices which could result in personal injury or property damage. Refer to the table below for definitions of the signal words.

SIGNAL WORD	MEANING
DANGER	Danger indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.
WARNING	Warning indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
CAUTION	Caution indicates a potentially hazardous situation which, if not avoided, may result in property damage.

NOTICE

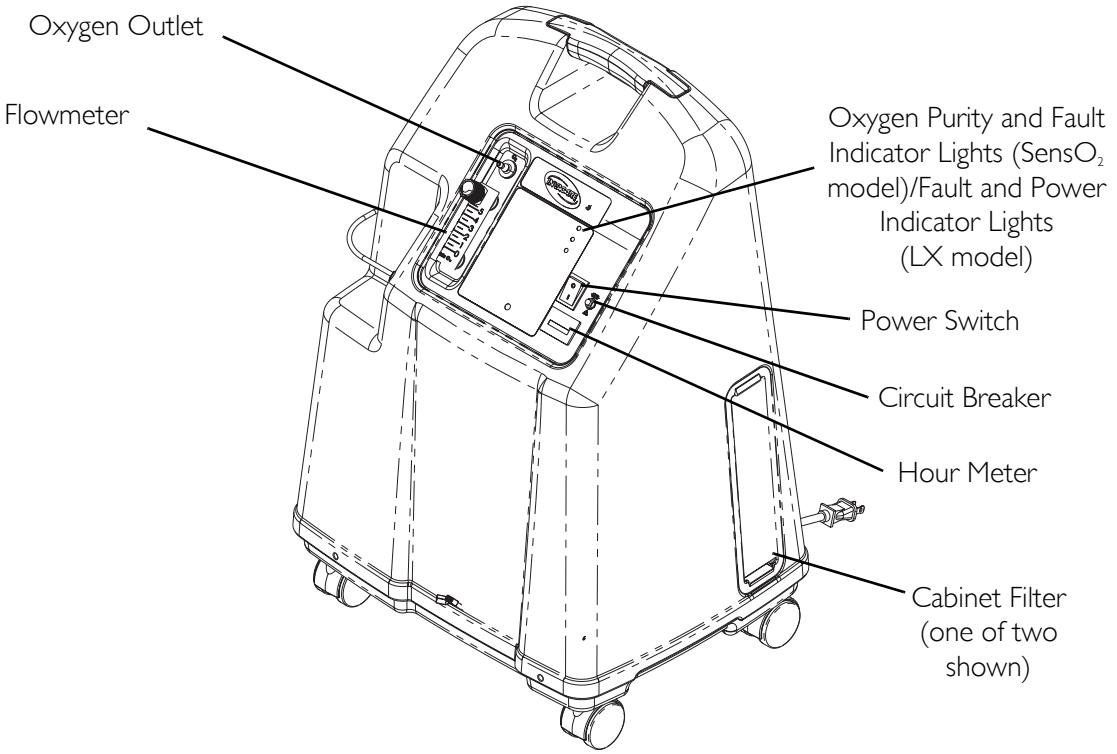
THE INFORMATION CONTAINED IN THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT NOTICE.

⚠ DANGER

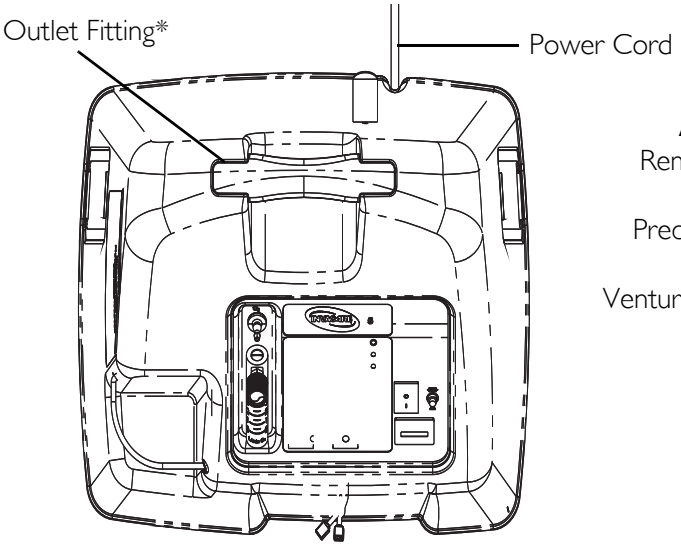
Users MUST not smoke while using this device. Keep all matches, lighted cigarettes or other sources of ignition out of the room in which this product is located. NO SMOKING signs should be prominently displayed. Textiles and other materials that normally would not burn are easily ignited and burn with great intensity in oxygen enriched air. Failure to observe this warning can result in severe fire, property damage, and cause physical injury or death.

FEATURES

FRONT VIEW


Oxygen Outlet
Flowmeter
Oxygen Purity and Fault Indicator Lights (SensO2 model)/Fault and Power Indicator Lights (LX model)
Power Switch
Circuit Breaker
Hour Meter
Cabinet Filter (one of two shown)

**NOTE: This outlet fitting is to be used only for filling oxygen cylinders with the Venture® HomeFill II home oxygen compressor. The outlet fitting does not affect concentrator performance. Refer to the HomeFill II owner's manual, part number 1100873, for connection and operating instructions. When not in use, the plug provided with the concentrator should be inserted into the outlet fitting.*



TOP VIEW

ACCESSORIES (NOT SHOWN):

Remote Humidifier/Flowmeter Accessory - IRCRF5

PreciseRx™ Pediatric Humidifier/ Flowmeter Accessory - IRCPF16

Venture® Homefill II home oxygen compressor - IOH200

TYPICAL PRODUCT PARAMETERS

Electrical Requirements:	120 VAC ± 10% (132 VAC/108 VAC), 60 Hz
Rated Current Input:	Platinum 5 and XL: 4.3 A
	Platinum 10: 4.7 A
Sound Level:	Platinum 5 and XL: 50 dB Average
	Platinum 10: 58 dB Average
Altitude:	Platinum 5 and XL - Up to 6,000 ft. (1828 meters) above sea level without degradation of concentration levels. From 6,000 ft. (1828 meters) to 13,129 ft. (4000 meters) below 90% efficiency
	Platinum 10 - Up to 4,000 ft. (1230 meters) above sea level without degradation of concentration levels. From 4,000 ft. (1230 meters) to 13,129 ft. (4000 meters) below 90% efficiency.
*Oxygen Output Concentration Levels: All 5LXO2/5LX models 95.6% to 87% at 0.5 to 5 L/min. and all 10LXO2/10LX models 95.6% to 87% at 2 L to 10 L/min.	* Stated concentration levels achieved after initial warm-up period (approximately 30 minutes).
Maximum Outlet Pressure:	5 ± 0.5 psi. (34.5 ± 3.45 kPa).
Flow Range:	Platinum 5 and XL - 0.5 to 5 L/min. For flowrates less than 1 L/min., we recommend the use of the Invacare Pediatric Flowmeter IRCPF16 Accessory.
	Platinum 10 - 2 L/min. to 10 L/min.
Low Flow Alarm:	Platinum 5 - 0 L/min. to 0.5 L/min. Platinum 10 - 0 L/min. to 1 L/min. Rapid Audible Alarm Beeping (No Accessories Connected).
Average Power Consumption:	Platinum 5 and XL: 400W Platinum 10: 585W
Pressure Relief Mechanism Operational at:	35 psi ± 3.5 psi (241 kPa ± 24.1 kPa).
Change in maximum recommended flow when back pressure of 7k Pa is applied:	0.7 L/min.
Filters:	Cabinet (2), Outlet HEPA and Compressor Inlet.
Safety System:	Current overload or line surge shutdown. High temperature compressor shutdown. High Pressure Alarm w/compressor shutdown. Low Pressure Alarm w/compressor shutdown. Battery Free Power Loss Alarm. $SensO_2$ Oxygen System ($SensO_2$ Model) Low Flow Alarm.
Width:	18 3/8 in. ± 3/8 in. (46.7 cm ± 1 cm).
Height:	26 3/8 in. ± 3/8 in. (67.0 cm ± 1 cm).
Depth:	14 3/8 in. ± 3/8 in. (36.5 cm ± 1 cm).
Weight:	Platinum 5 and XL: 52 lbs ± 2 lbs (23.6 kg ± 1 kg).
	Platinum 10: 53 lbs ± 2 lbs (24.0 kg ± 1 kg).

Shipping Weight:	Platinum 5 and XL: 58 lbs ± 2 lbs (26.3 kg ± 1 kg).
	Platinum 10: 60 lbs ± 2 lbs (27.2 kg ± 1 kg).
Operating Ambient Temperature:	50°F - 95°F (10°C - 35°C) at 20-60% relative humidity.
Exhaust:	Platinum 5 and XL: Less than Ambient + 35°F (+19°C).
	Platinum 10: Less than Ambient + 45°F (+25°C).
Oxygen Output:	Platinum 5 and XL: Less than Ambient + 4°F (+2°C).
	Platinum 10: Less than Ambient + 8°F (+4.4°C).
Cabinet:	Impact Resistant flame-retardant plastic cabinet that conforms to UL 94-V0.
Regulatory Listing:	Double Insulated Product ETL certified complying with UL 1097 ETL certified to CSA C22.2 No. 68.
Electrical:	No extension cords.
Placement:	No closer than three (3) inches from any wall, furniture, draperies, or similar surfaces.
Tubing:	Platinum 5 and XL: 7 ft cannula with a maximum 50 ft of Crush-Proof Tubing (DO NOT pinch).
	Platinum 10: Recommended use up to 25 ft high flow tubing with high flow cannula at all flow rates.
Relative Humidity:	20 to 60%
Time of Operation:	Up to 24 hours per day.
Recommended Storage and Shipping Temperature:	-20°F to 150°F (-29°C to 65°C), at 15-95% relative humidity.

Indicators for SensO2 Models:

Label Symbol	O_2 Purity	Indicator Lights
	SYSTEM FAILURE Below 73%	**RED** - Continuous Audible Alarm Sieve-GARD™ Compressor Shutdown
	73% to 85%	**YELLOW**
O_2	SYSTEM OKAY Over 85%	**GREEN**

Indicators for Non-SensO2 Models:

Label Symbol	Status	Indicator Lights
	SYSTEM FAILURE	**RED**
I/O	SYSTEM OKAY	**GREEN**

SECTION 1—IMPORTANT SAFEGUARDS

⚠ WARNING

IMPORTANT SAFEGUARDS contains important information for the safe operation and use of this product. DO NOT use this product or any available optional equipment without first completely reading and understanding these instructions and any additional instructional material such as Owner's Manuals, Service Manuals or Instruction Sheets supplied with this product or optional equipment. If you are unable to understand the Warnings, Cautions or Instructions, contact a healthcare professional, dealer or technical personnel before attempting to use this equipment - otherwise, injury or damage may occur.

Important Safeguards

The use of oxygen therapy requires that special care be taken to reduce the risk of fire. Any materials that will burn in air, and some that will not, are easily ignited and burn rapidly in high concentrations of oxygen. For safety concerns, keep all sources of ignition out of the room in which this product is located and away from areas where oxygen is being delivered. Textiles, oil and other combustibles are easily ignited and will burn with great intensity in oxygen-enriched air. NO SMOKING signs should be prominently displayed.

A spontaneous and violent ignition may occur if oil, grease or greasy substances come in contact with oxygen under pressure. These substances MUST be kept away from the oxygen concentrator, tubing and connections, and all other oxygen equipment. DO NOT use any lubricants unless recommended by Invacare.

For optimum performance, Invacare recommends that each concentrator be on and running for a minimum of 30 minutes at a time. Shorter periods of operation may be harmful for maximum product life.

Keep the power cord away from heated or hot surfaces.

DO NOT move or relocate concentrator by pulling on the power cord.

NEVER drop or insert any object into any opening.

NEVER block the air openings of the product or place it on a soft surface, such as a bed or couch, where the air opening may be blocked. Keep the openings free from lint, hair and the like.

Fill humidifier with water to the level shown by the manufacturer. DO NOT overfill.

Invacare recommends that Crush-Proof oxygen tubing be used with this product and NOT exceed 50 ft. (15.2m) in length. Recommended use for Platinum 10 is up to 25 ft. in length of high flow tubing.

Maintenance

The Platinum Oxygen Concentrator was specifically designed to minimize routine preventive maintenance. Only professionals of the healthcare field or persons fully conversant with this process, such as authorized or factory trained personnel, should perform preventive maintenance or performance adjustments on the oxygen concentrator.

Radio Frequency Interference

Most electronic equipment is influenced by Radio Frequency Interference (RFI). CAUTION should be exercised with regard to the use of portable communications equipment in the area around such equipment.

To Reduce the Risk of Burns, Electrocution, Fire or Injury to Persons

DO NOT come in contact with the concentrator while you are wet.

DO NOT place or store product where it can drop into water or other liquids.

DO NOT reach for product that has fallen into water. Unplug IMMEDIATELY.

No adjustments should be made to the flowrate unless prescribed by a physician therapist.

The product should NEVER be left unattended when it is plugged in.

Close supervision is necessary when this product is used by, on or near children or physically challenged individuals.

The Platinum concentrator is intended to be used only as an oxygen supplement as described in the Owner's Manual.

Invacare products are specifically designed and manufactured for use in conjunction with Invacare accessories. Accessories designed by other manufacturers have not been tested by Invacare and are not recommended for use with Invacare products.

DO NOT connect the concentrator in parallel or series with other oxygen concentrators or oxygen therapy devices.

Use of some administration accessories or certain humidifiers not specified for use with oxygen concentrator may impact the performance.

Avoid creation of any spark near medical oxygen equipment. This includes sparks from static electricity created by any type of friction.

SECTION 2—INSTALLATION/ SEQUENCE OF OPERATION

Installation/Verification of Battery Free Power Loss Alarm

When your new Platinum concentrator arrives, it should be checked for proper operating conditions.

1. If the unit has been in below-freezing temperatures, allow it to warm up to room temperature before operating.
2. The concentrator may need to be turned on for four (4) to five (5) seconds to charge the Battery Free Power Loss Alarm. Connect power cord to outlet and turn the concentrator on. Turn flow control knob counterclockwise and flow will begin immediately. Set flow rate to five (5) L/min. Let the unit run for 30 minutes, then turn unit off.
3. Unplug the power cord and press on/off (I/O**)** switch to the On (I) position. An intermittent audible alarm will sound. This confirms proper operation of the Battery Free Power Loss Alarm. Turn On/Off switch Off (O).
4. Connect power cord to outlet and turn on concentrator. Unit will beep on start-up.
5. Check the oxygen concentration per specifications after 30-40 minutes running time.

Sequence of Operation

Turning on (I) the power switch applies 120 VAC to the compressor motor, hour meter, transformer, cooling fan and the printed circuit (P.C.) board.

Room air enters the compressor via the cabinet filter and the compressor inlet filter. The air is compressed by the wobble pistons in the compressor to a pressure of 21 p.s.i. (144.79 kPa) for Platinum 5, XL and 25 p.s.i. (172.36 kPa) for Platinum 10.

As increased pressure creates increased temperature, a heat exchanger is used to lower the temperature before the air enters the 4-way valve. It is then channeled to a sieve bed containing the adsorption material. Restriction downstream of the sieve bed causes pressure to build up inside the sieve bed which is necessary for the adsorption process. A small amount of relatively pure oxygen enters the top of the second bed through a restrictive leak in the pressure equalization (P.E.) valve with the balance entering a storage tank. The nitrogen removed is exhausted back from the bed through the 4-way valve into room air. A muffler is located at the exhaust end of the valve to muffle the sound of the exhaust as it exits the concentrator.

The oxygen not being used to exhaust is channeled into the storage tank. The pressurized oxygen is regulated down to five (5) p.s.i. (34.4 kPa), enters an accurate flow-measuring device, flows through Outlet HEPA filter and check valve, then out to the patient.

The electrical activation of the 4-way Valve is accomplished every 8 to 15 seconds by the pressure sensor and P.C. Board electronics when the pressure reaches a set point of 21 p.s.i. (144.79 kPa) for Platinum 5 and XL; 25 p.s.i. (172.36) for Platinum 10. The time between cycles is dependent on altitude, flow rate and internal environmental factors.

A P.E. valve opens just prior to the shift of the 4-way valve. This allows highly concentrated oxygen to enter the just exhausted bed from the top. This additional pressure allows the bed to start its cycle at a higher pressure. The P.E. valve will close just after the shift of the 4-way valve.

If main power is lost, the Battery Free Power Loss Alarm will sound a short "BEEP", with a long pause after. All units are equipped with a diagnostic alarm system that signals if the pneumatic pressure or electrical systems malfunction. The Troubleshooting Guide in this manual explains the alarm system signals and reasons, in detail, for your convenience.

SensO_2 Oxygen Sensor Technology - Ceramic Zirconia Sensor

Technical Description

The oxygen being produced by the concentrator flows out of the product tank and into the flowmeter. A small flow of oxygen produced by the unit is sent through a precision orifice to the oxygen sensor mounted on the printed circuit board.

As the oxygen enters the sensor, it passes through a screen and contacts the sensing disk.

Electric current flowing through a metal film resistor heats the disk in excess of 300°C. Oxygen molecules contact the electrode of the disk and pick-up extra electrons to become oxygen ions. These oxygen ions are attracted to the electrode on the bottom of the zirconia sensing disk. Because of the crystal structure of the zirconia, only oxygen ions can pass through. When the oxygen ions reach the bottom electrode, the extra electrons are released from the oxygen ions and oxygen molecules return to the air. The number of electrons is directly related to the oxygen concentration. The electrons travel to the P.C. board where they are counted and the oxygen concentration reading is calculated.

A microprocessor on the P.C. board contains software that interprets the signal being received from the sensor. It compares the signal to clinically acceptable limits. Signals outside of the clinically acceptable limits generate responses in the form of lights, audible indicators, and/or system shut-down.

Operating Sequence

Once the power switch has been turned on (I), the SensO_2 circuit will wait five (5) minutes for the concentrator to begin producing clinically acceptable oxygen and the oxygen sensor to stabilize. The GREEN light will illuminate (indicating normal system operation) while the oxygen sensor is warming up.

After five (5) minutes, if the oxygen purity exceeds 85% ± 2%, the GREEN light will continue to illuminate.

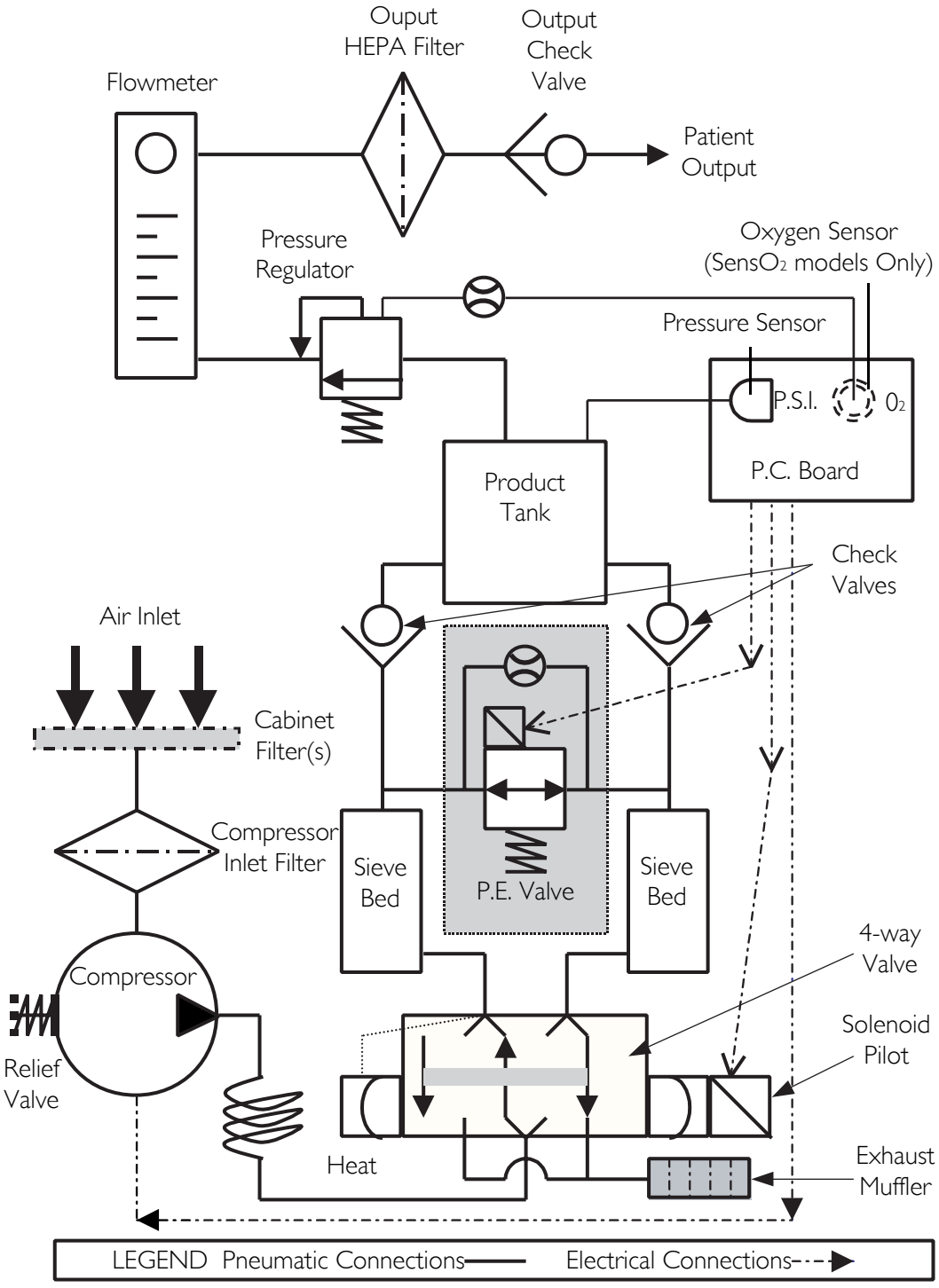
If the oxygen level is not above 85% ± 2% after the first five (5) minutes, the system will continue to monitor the O_2 and wait for a maximum of 30 minutes from start-up to reach 85% ± 2% before activating an alarm. Environmental factors such as low voltage, high altitude, or age of the machine will affect the time required to reach 85% ± 2%.

If the oxygen level is not above 85% ± 2% within the first 30 minutes, the oxygen concentration alarm sequence will activate and the unit will shut down.

When oxygen concentration is above 85% ± 2%, the sensor measures oxygen purity every 10 minutes. If a reading falls below 85% ± 2%, a YELLOW light will illuminate. If the oxygen purity falls below 73% ± 3% the RED light/Alarm/Shut-Down mode will activate.

SECTION 3—PNEUMATIC DIAGRAM

Plantinum Oxygen Concentrator



SECTION 4—TROUBLESHOOTING

SYMPTOM	PROBABLE CAUSE	SOLUTION
NORMAL OPERATION: Internal Status Indicators: RED: Off GREEN: Off Unit plugged in, power switch on. Single beep on start up.	No Problems	System Okay.
POWER LOSS: Internal Status Indicators: RED: Off GREEN: Off Unit unplugged, power switch on, alarm off.	No Problems.	Battery Free Circuit drained. Plug in cord and turn power switch ON (I) to recharge.
POWER LOSS: Internal Status Indicators: RED: Off GREEN: Off Unit plugged in, power switch, alarm off, battery Free circuit drained.	No power at outlet.	Check electrical outlet with a table lamp or voltmeter set on 50-200 VAC scale. If outlet isn't working, check protective device in home's electrical panel or consult an electrician. Also ensure that unit is properly plugged in. DO NOT use extension cords. Move to another outlet or circuit.
	Power cord: a. Frayed. b. Broken or damaged spade. c. Spade connector from power cord loose or disconnected (inside back of unit).	a. Reattach cord b. Replace power cord connectors on plug. c. Reattach connector.
POWER LOSS: (Continued) Internal Status Indicators: RED: Off GREEN: Off Unit plugged in, power switch, alarm off. Battery Free circuit drained	On/Off (i/o) switch. a. Disconnected wire.	Check all electrical connections to the ON/OFF (I/O) switch for any disconnected wires.
	b. Faulty switch.	If the concentrator does not come on at all and wiring is intact, color code and remove wires one at a time. Remove and replace with new one. Transfer wires from old switch to new switch one at a time to the matching contact.
	Circuit breaker tripped.	Reset breaker. *NOTE: Breaker may trip to safeguard concentrator during a power surge.* *If breaker trips immediately, there is a probable short in the unit. Check for pinched or charred wires. If the breaker does not trip, run unit for approximately two (2) hours. The circuit breaker should be less than 10 ohms. If breaker trips again, there is an internal problem. Contact INVACARE TECHNICAL SERVICE at 1-800-832-4707.*
	P.C. board. a. P.C. board damaged.	a. Replace P.C. Board. Refer to Replacing P.C. Board on page 64.
	b. Loose or damaged connector.	b. Repair or replace connector.

SYMPTOM	PROBABLE CAUSE	SOLUTION
INTERNAL POWER LOSS SENSO2: Internal Status Indicators: RED: Off GREEN: Off Alarm may or may not be on. Control Panel Indicators: RED: Off YELLOW: Off GREEN: Off Fan operates, Compressor not operating.	Transformer assembly. a. Faulty b. Connector loose or disconnected. c. Faulty wiring.	a. Replace. Refer to Replacing Transformer Assembly on page 66. b. Reattach connector. c. Replace transformer assembly. Refer to Replacing Transformer Assembly on page 66.
	P.C. board faulty	Replace P.C. board. Unit requires retiming after P.C. board replacement. Refer to Replacing P.C. Board on page 64.
HIGH PRESSURE: Internal Status Indicators: RED: One (1) Flash GREEN: Two (2) Flashes Unit plugged in, power switch on, continuous alarm. Compressor shut down.	P.C. board: a. Malfunction b. Disconnected wire. c. Shifting valve at pressures greater than 25 p.s.i.for Platinum 5 and XL; 29 PSI for Platinum 10.	a. Set flow to max L/min. for concentrator. Check voltage across Pilot Valve 1 on 200 volt scale. If meter reads 0 volts when unit is turned on, replace P.C. board b. Check spade connectors on pilot valves 1 or 2 and connectors on P.C. board. c. Replace P.C. board. Unit requires retiming after P.C. board replacement. Refer to Replacing P.C. Board on page 64.
	4-way Valve: a. Not shifting. b. Bad coil. c. Coil resistance.	a. Check voltage. If voltage rises to approximately 24 volts D.C. when unit shuts down, P.C. board is functioning properly. Replace the valve if shorted or open. Refer to Replacing 4-Way Valve on page 70. b. Replace 4-way valve. Refer to Replacing 4-Way Valve on page 70. c. Coil should read 80 ohm ± 10.

SYMPTOM	PROBABLE CAUSE	SOLUTION
LOW PRESSURE: Internal Status Indicators: RED: One (1) Flash GREEN: One (1) Flash Or RED: One (1) Flash GREEN: Three (3) Flashes Control Panel Indicators: RED: On YELLOW: Off GREEN: Off Unit plugged in, power switch on, continuous audible alarm. Compressor shut down (Failure to cycle due to low pressure).	Compressor inlet filter dirty or plugged.	Replace compressor inlet filter. Refer to Replacing the Compressor Inlet Filter on page 27.
	Compressor: a. Leaks at fittings or tubing b. Leaking or defective relief valve. c. Insufficient voltage at outlet. d. Worn cup seals or gaskets.	a. Replace or repair. b. Repair leak or replace. c. DO NOT use extension cords. Use another outlet. d. Rebuild top end of compressor. Refer to Rebuilding the Thomas Model 2650 and 2660 Compressor - Platinum 5 and 10 Models on page 35 or Platinum XL Model - Rebuilding the Gast Compressor on page 43.
	Heat exchanger: a. Leak at tubing or body chamber. b. Inspect tubing and heat exchanger.	a. Replace or retighten. b. Replace or retighten tubing. Replace heat exchanger. Refer to Replacing Heat Exchanger on page 59.
	Regulator cracked or leaking.	Replace regulator. Refer to Replacing Regulator on page 56.
	P.E. valve leaking.	Replace P.E. Valve. Check voltage at P.E. valve connector on 24 volt D.C. scale. The P.E. Valve activates or energizes approximately one (1) second prior to the activation of the 4 way valve with approximately 24 volts. If voltage is in excess of 24 volts consistently, replace the P.C. board. Refer to Replacing P.C. Board on page 64. If the P.C. board voltage acts normally, replace the P.E. valve. Refer to Replacing P.E. Valve on page 51. *NOTE: Check for leaks starting at the compressor output through all the pneumatic connections. Major leaks will cause system pressures to remain below adequate shift (exhaust) pressures and will cause compressor shutdown.*
Defective Parts: Internal Status Indicators: RED: One (1) Flash GREEN: Five (5) Flashes Or RED: Two (2) Flashes GREEN: Three (3) Flashes CONTROL PANEL INDICATORS: RED: On YELLOW: Off GREEN: Off Unit plugged in, power switch on, continuous audible alarm. Compressor shut down.	Defective main valve coil.	a. Replace main valve. b. Replace main valve coil.
	Connector loose.	Reattach connector.
	Defective P.E. valve coil. (Resistance 80 ohm's ± 10.)	Replace P.E. coil if shorted or open on resistance check. Refer to Replacing P.E. Valve on page 51.
	Defective P.E. valve.	Replace P.E. valve. Refer to Replacing P.E. Valve on page 51.
	Connector loose.	Reattach connector.
	Defective P.C. board.	Replace P.C. board. Refer to Replacing P.C. Board on page 64.

SYMPTOM	PROBABLE CAUSE	SOLUTION
Unit not operating: Alarm: On or Off Internal Status Indicators: RED: Two (2) Flashes GREEN: Four (4) Flashes Or RED: Two (2) Flashes GREEN: Five (5) Flashes	P.C. board Failure.	Replace P.C. board.Refer to Replacing P.C. Board on page 64.
LOW CONCENTRATION: NOTE: Check for O_2 purity using a calibrated Oxygen Analyzer at Test Point 1 (OXYGEN OUTLET) of the concentrator. Internal Status Indicators: RED: Two (2) Flashes GREEN: One (1) Flash73% Shutdown Control Panel Indicators: SensO_2 ONLY: RED: On YELLOW: Off GREEN: Off For SensO_2 units, the RED indicator will signal extremely low purity and will be accompanied by a continuous audible alarm and a system shutdown. Repairs are required.	Cabinet filters dirty.	Clean or replace. Refer to Cleaning the Cabinet Filter on page 25, Replacing the Outlet HEPA Filter on page 26, and Replacing the Compressor Inlet Filter on page 27.
	Compressor inlet filter dirty.	Replace inlet filter. Refer to Replacing the Compressor Inlet Filter on page 27.
	Compressor: a. Defective. b. Faulty capacitor. c. Bad motor windings. d. Worn seals. e. Bad bearings. f. Leak at fittings or tubing. g. Leaky or defective relief valve. h. Insufficient voltage (outlet).	 a. Replace compressor. Refer to Replacing Compressor Assembly on page 31. b. Replace capacitor. Refer to Replacing Capacitor on page 33. c. Replace compressor. d. Rebuild top end of compressor. Refer to Rebuilding the Thomas Model 2650 and 2660 Compressor - Platinum 5 and 10 Models on page 35 or Platinum XL Model - Rebuilding the Gast Compressor on page 43. e. Replace compressor. f. Replace fittings or tubing. g. Replace relief valve. h. DO NOT use extension cords.
	Heat exchanger: a. Leak at tubing or body chamber. b. Inspect tubing and heat exchanger.	 a. Replace or retighten. b. Replace or retighten tubing. Replace heat exchanger. Refer to Replacing Heat Exchanger on page 59.
	Regulator cracked or leaking.	Replace. Refer to Replacing Regulator on page 56.
	Exhaust muffler dirty or plugged.	Replace. Refer to Replacing the Exhaust Canister/Exhaust Muffler (Platinum 5 Models Manufactured before 7/24/03) on page 28.
	Fan: a. Not operating. Unit overheating. b. Faulty fan.	 a. Leads to fan disconnected. Reconnect. b. Replace.Refer to Replacing Cooling Fan on page 62.
	Sieve beds defective.	Replace. Refer to Installing the Sieve Bed Pressure Tap-In Kit Installation and Checking Bed Pressure on page 92.
	Tubing kinked or blocked.	Repair or replace.

SYMPTOM	PROBABLE CAUSE	SOLUTION
LOW CONCENTRATION (Continued)	P.C. board: a. Shifts at wrong pressures.	Check pressure at product tank. Pressure should rise to 21 p.s.i. (25 p.s.i. for Platinum 10) at shift point. If not, replace P.C. Board.Refer to Replacing P.C. Board on page 64.
	Flowmeter: a. Flowmeter opened beyond maximum flow rate. b. Cracked or broken fitting. c. Input tubing leaking or loose.	a. Return flow to maximum setting. b. Replace fitting. c. Repair or replace. Refer to Replacing Flowmeter on page 68.
	Timing.	To accommodate for varying tolerances when replacing components, an adjustable timer is used to control the shifting of the Pressure Equalization (P.E.) valve. Refer to Timing the Platinum 5, XL, and 10 Concentrators on page 82.
	P.E. valve: a. Bad coil. b. Restrictor blockage.	a. Replace P.E. valve. b. Replace P.E. valve. Refer to Replacing P.E. Valve on page 51.
	Inspect P.C. board restrictor tubing for kinks or tears.	Replace P.C. board. Unit may need retiming after board replacement. Refer to Replacing P.C. Board on page 64.
FLUCTUATING FLOW:	Regulator/Flowmeter: a. Incorrectly set regulator. b. Flowmeter malfunction.	a. Check pressure at oxygen outlet. Adjust regulator. b. If flow is still unstable, check for leaks starting at the compressor outlet fitting through all pneumatic connections. If no leaks are found and flow is still fluctuating, replace the regulator. If pressure at test point is within spec (5 p.s.i. ± 0.2 max. [34.4 kPa ± 6.89]), replace flowmeter. Refer to Replacing Flowmeter on page 68.
	Outlet HEPA filter: a. Dirty or plugged	a. If low flow conditions persist, replace outlet HEPA filter. Refer to Replacing the Outlet HEPA Filter on page 26.

SYMPTOM	PROBABLE CAUSE	SOLUTION
UNIT EXCESSIVELY LOUD:	Pneumatic exhaust: a. Muffler cracked, damaged or missing. b. Muffler tubing disconnected or damaged.	 a. Replace. Refer to Replacing the Exhaust Canister/Exhaust Muffler (Platinum 5 Models Manufactured before 7/24/03) on page 28. b. Reconnect or replace tubing.
	Compressor inlet filter missing and/or orange sticker removed.	a. Replace compressor inlet filter. Refer to Replacing the Compressor Inlet Filter on page 27.
	Compressor removed.	a. Replace Compressor. Refer to Replacing Compressor Assembly on page 31.
	Incorrect style of inlet filter (aftermarket).	a. Replace with factory OEM sound reduced style inlet HEPA filter.
UNIT OVERHEATS:	Base exhaust vent plugged or restricted.	Place unit at least 3-inches from any wall. DO NOT place unit on pile or shag carpeting that may restrict air flow.
	Cabinet filters dirty or blocked.	Clean or replace. Refer to Cleaning the Cabinet Filter on page 25.
	Fan: a. Leads to fan disconnected. b. Defective fan. c. Fan installed upside down.	 a. Reconnect leads. b. Replace fan. Refer to Rebuilding the Thomas Model 2650 and 2660 Compressor - Platinum 5 and 10 Models on page 35 or Platinum XL Model - Rebuilding the Gast Compressor on page 43. c. Install fan with air flow arrow pointing down.
	Heat exchanger: a. Dirty or plugged. b. Damaged.	 a. Clean heat exchanger. b. Replace heat exchanger. Refer to Replacing Heat Exchanger on page 59.
	Compressor: a. Defective. b. Faulty capacitor. c. Bad motor windings. d. Worn seals. e. Bad bearings.	 a. Replace compressor. Refer to Replacing Compressor Assembly on page 31. b. Replace capacitor. Refer to Replacing Capacitor on page 33. c. Replace compressor. d. Replace compressor. e. Replace compressor.
	Line voltage excessive (surge).	Have line voltage inspected by certified electrician. A voltage regulator may be required and is obtainable from your local electric company.

SYMPTOM	PROBABLE CAUSE	SOLUTION
OXYGEN PURITY: Good Internal Status Indicators: Control Panel Indicators: RED: Off YELLOW: On GREEN: On After 30 minutes of run time, unit operates normally, oxygen purity within normal range. GREEN or YELLOW panel indicator should illuminate.	P.C. board defective.	Replace P.C. board. Refer to Replacing P.C. Board on page 64. Unit may need retiming after P.C. board replacement. Refer to Timing the Platinum 5, XL, and 10 Concentrators on page 82.
UNIT NOT OPERATING, INTERNAL STATUS INDICATORS: RED: Off GREEN: Off Control Panel Indicators: RED: Off YELLOW: Off GREEN: Off Power Switch ON. Continuous audible alarm.	Transformer assembly: a. Assembly connector disconnected. b. Faulty transformer assembly.	a. Reattach connector. b. Replace transformer assembly. Refer to Replacing Transformer Assembly on page 66.
UNIT OPERATING, INTERNAL STATUS INDICATORS: RED: Three (3) Flashes GREEN: One (1) Flash CONTROL PANEL INDICATORS: RED: Off YELLOW: Flashing GREEN: On	Internal repairs required.	Replace SensO_2 circuit board. Refer to Replacing P.C. Board on page 64.
Low-Flow Alarm does not activate on flows less than 0.5 L/min. *NOTE: This feature was added on units manufactured after November 2002. These units can be identified by a single beep on start up.*	System leak.	Repair leak in product tank, regulator, tubing, fittings, or flow meter.
	Defective check valves.	Replace check valves. Refer to Replacing Check Valves on page 54.

NOTE: On models manufactured after 12/02, the error code displayed on the internal status indicators is maintained in memory to aid in repairs. The error code must be cleared from the unit's memory after fixing the fault. The error code memory will be cleared after turning power on and off five times after the fault was detected.

SECTION 5—CABINET

Removing Cabinet

NOTE: For this procedure, refer to FIGURE 5.1.

⚠ WARNING

To prevent electrical shock, always disconnect concentrator from electrical outlet before servicing.

1. Unplug unit.
2. Remove the four (4) mounting screws that secure cabinet assembly to the base assembly.
3. Lift the cabinet straight up.

NOTE: When required, vacuum inside of the cabinet and exposed foam insulation.

4. To re-install cabinet, reverse STEPS 2-3.

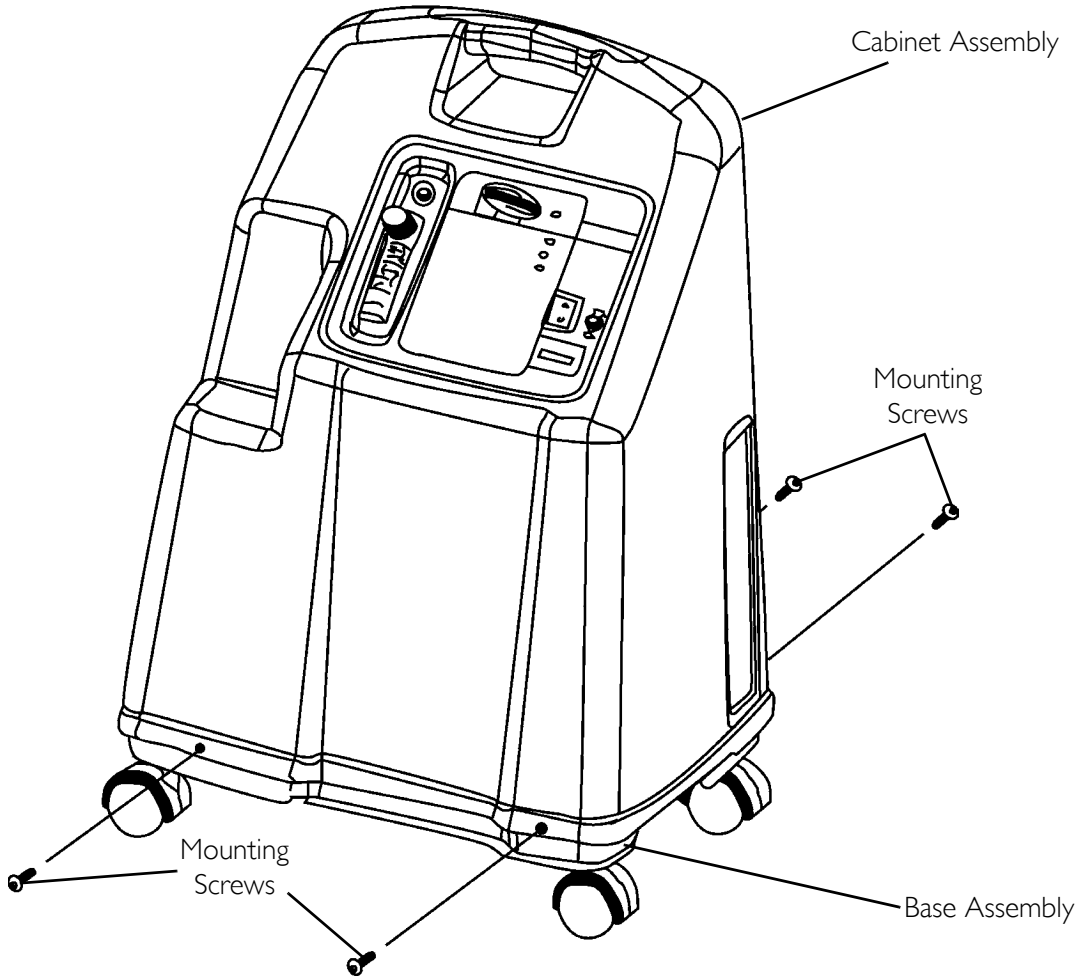


FIGURE 5.1 Removing Cabinet

SECTION 6—PREVENTIVE MAINTENANCE

⚠ WARNING

To prevent electrical shock, always disconnect concentrator from electrical outlet before servicing.

NOTE: The Platinum Concentrators are specifically designed to minimize routine preventive maintenance at intervals of once per year. In places with high dust or soot levels, maintenance may need to be performed more often. The following MUST be performed at a minimum of one (1) year in service to assure years of additional reliability. Refer to Troubleshooting on page 17 for plugged filter symptoms. Only qualified technicians should perform preventive maintenance on the concentrator. Power should be disconnected before beginning preventive maintenance on the Invacare concentrator.

Cleaning the Cabinet Filter

NOTE: For this procedure, refer to FIGURE 6.1.

NOTE: Perform this procedure as needed depending upon the environment the concentrator is used in.

NOTE: There are two (2) cabinet filters, one (1) located on each side of the cabinet.

1. Remove each filter and clean at least once a week depending on environmental conditions.

NOTE: Environmental conditions that may require more frequent cleaning of the filters include but are not limited to: high dust, smoking, air pollutants, etc.

2. Clean the cabinet filters with a vacuum cleaner or wash in warm soapy water and rinse thoroughly.
3. Dry the filters thoroughly before reinstallation.

CAUTION

DO NOT operate the concentrator without the filters installed.

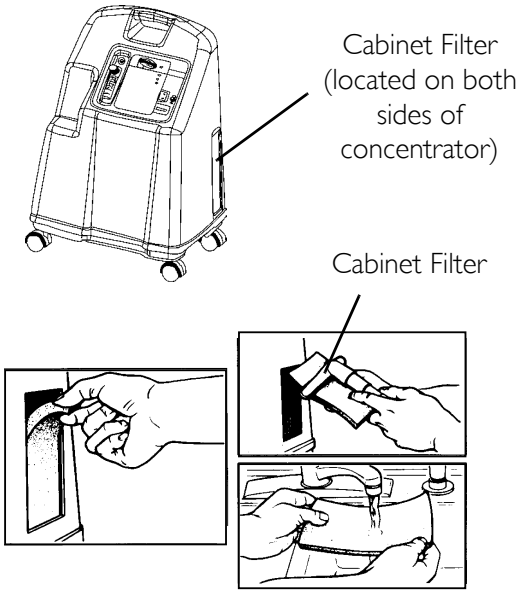


FIGURE 6.1 Cleaning the Cabinet Filter

Replacing the Outlet HEPA Filter

NOTE: For this procedure, refer to FIGURE 6.2.

Check the Outlet HEPA Filter

NOTE: The outlet HEPA filter can be checked by performing the following procedure.

1. Turn the concentrator on and adjust the flowmeter to the maximum flow of the unit.
2. Observe the flowmeter's flow indicator while connecting a fifty (50) foot cannula tube to the outlet barb of the concentrator (not shown).
3. If the flow indicator fluctuates, the outlet HEPA filter may need replacement. Refer to Troubleshooting on page 17.

Replace the Outlet HEPA Filter

NOTE: Perform this procedure as needed depending on the outlet HEPA filter check results.

1. Unplug the unit.
2. Locate the filter access and humidifier adapter storage plate located on the side of the concentrator.
3. Insert a flathead screwdriver in the plate groove on the top edge of the plate and gently pry the humidifier adapter storage plate open (Detail “A”).
4. Remove plate and set aside.
5. Grasp the existing outlet HEPA filter and disconnect from the short silicone tube (Detail “B”).
6. Disconnect existing outlet HEPA filter from the long silicone tube (Detail “B”).
7. Discard existing outlet HEPA filter.
8. Attach new outlet HEPA filter to short and long silicone tubes.
9. Reinstall filter access and humidifier adapter storage plate.

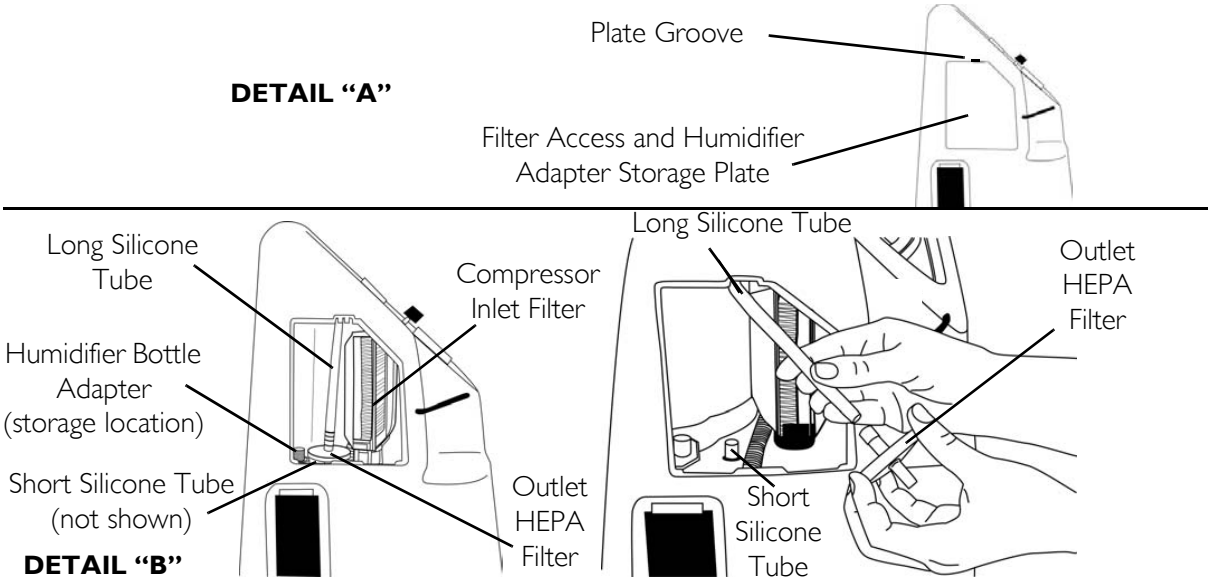


FIGURE 6.2 Replacing the Outlet HEPA Filter

Replacing the Compressor Inlet Filter

NOTE: For this procedure, refer to FIGURE 6.2 and FIGURE 6.3.

NOTE: Perform this procedure as needed depending upon the environment the concentrator is used in.

1. Unplug the unit.
2. Locate the filter access and humidifier adapter storage plate located on the side of the concentrator.
3. Insert a flathead screwdriver in the plate groove on the top edge of the plate and gently pry the humidifier adapter storage plate open to remove the plate. Refer to Detail "A" in FIGURE 6.2.
4. Grasp the compressor inlet filter and pull downward.
5. Discard the existing compressor inlet filter.
6. Check the label seal on the filter to ensure it is correct for the concentrator model.

NOTE: Filter p/n 1131249 is fully forward and backward compatible with all models. This filter replaces 1108078 on Platinum 5 and XL models.

7. Do one (1) of the following:
   - For Platinum 5 and XL: Leave the entire label on p/n 1108078 (Detail "A" of FIGURE 6.3).
   - For Platinum 10: Remove the lower half of the label on p/n 1131249 (Detail "B" of FIGURE 6.3).
8. Install new compressor inlet filter by inserting the filter opening into the rubber base (Detail "C" of FIGURE 6.3).
9. Push the filter down until the rubber base touches the edge of the filter.
10. Reinstall the filter access and humidifier adapter storage plate.

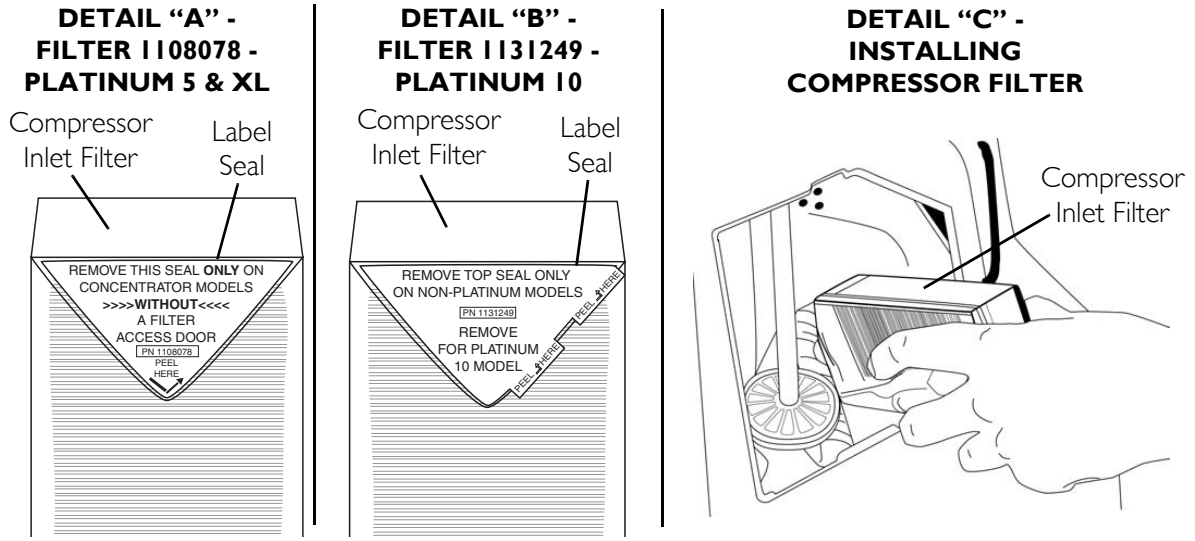


FIGURE 6.3 Replacing the Compressor Inlet Filter

Replacing the Exhaust Canister/Exhaust Muffler (Platinum 5 Models Manufactured before 7/24/03)

NOTE: For this procedure, refer to FIGURE 6.4.

NOTE: The following should be performed at 20,000 hour intervals although these procedures can be performed as needed depending upon the environment the concentrator is exposed to.

1. Unplug unit.
2. Remove cabinet. Refer to Removing Cabinet on page 24.
3. Remove the two (2) mounting screw(s) from rear of sound box.
4. Disconnect and remove the manifold exhaust tubing from the barbed fittings on top of the exhaust canister.
5. Unscrew the exhaust muffler located on the exhaust canister by turning counterclockwise.
6. Inspect exhaust canister to ensure the barbed fittings are clear and do one (1) of the following:
   - Replace exhaust canister and muffler if plugged or restricted.
   - Install only new exhaust muffler if exhaust canister is in good condition.
7. Install new/re-install existing exhaust canister by reversing STEPS 3-5.
8. Reinstall cabinet. Refer to Removing Cabinet on page 24.

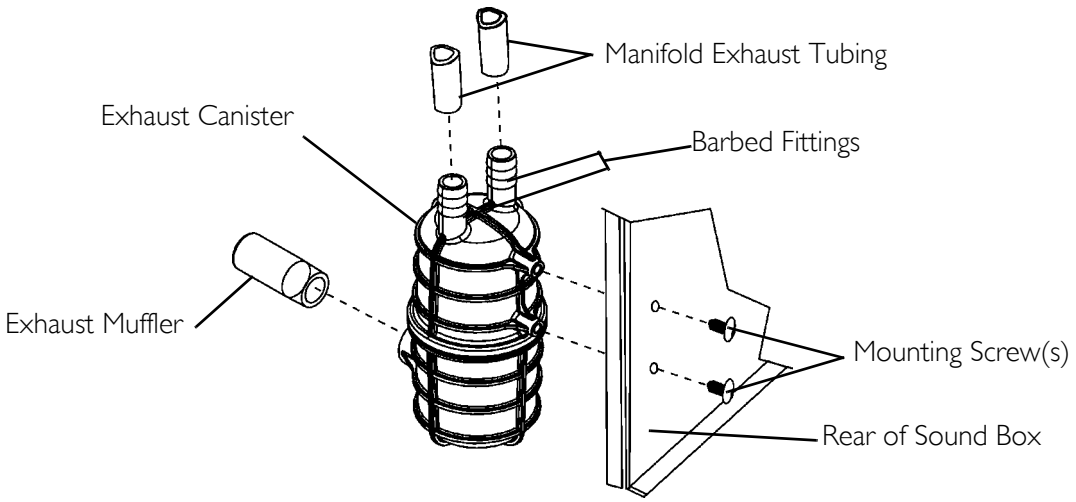


FIGURE 6.4 Replacing the Exhaust Canister/Exhaust Muffler (Platinum 5 Models Manufactured before 7/24/03)

Replacing the Throttling Muffler

NOTE: For this procedure, refer to FIGURE 6.5.

1. Unplug unit.
2. Remove cabinet. Refer to Removing Cabinet on page 24.
3. Cut tie-wrap.
4. Remove existing throttling muffler
5. Install new throttling muffler and secure with new tie-wrap.
6. Reinstall the cabinet. Refer to Removing Cabinet on page 24.

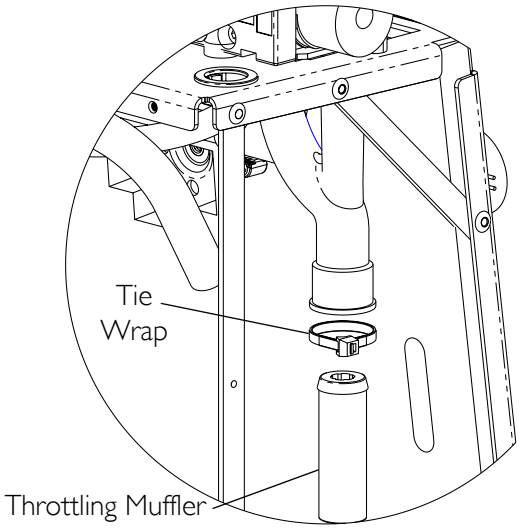


FIGURE 6.5 Replacing the Throttling Muffler

Cleaning the Heat Exchanger

⚠ WARNING

To prevent electrical shock, always disconnect concentrator from electrical outlet before servicing.

NOTE: For this procedure, refer to FIGURE 6.6.

1. Unplug unit.
2. Remove cabinet. Refer to Removing Cabinet on page 24.

CAUTION

Use care not to deform heat exchanger when installing, removing or cleaning.

3. Remove excess dirt using compressed air or vacuum.
4. Reinstall cabinet. Refer to Heat Exchanger on page 59.

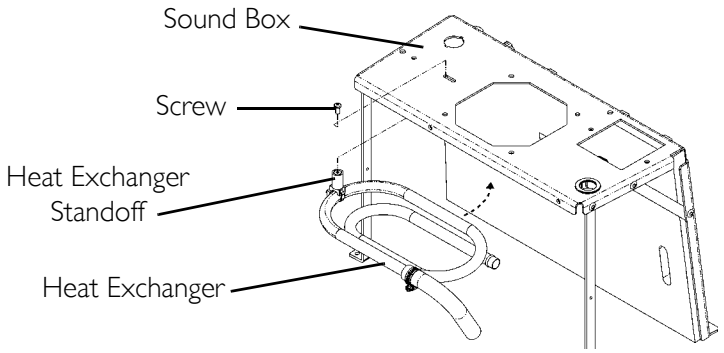


FIGURE 6.6 Cleaning the Heat Exchanger

PREVENTIVE MAINTENANCE RECORD
INVACARE PLATINUM OXYGEN CONCENTRATOR

Yes, you can.™

MODEL NO. IRC_____ SERIAL NO. _____

ON EACH INSPECTION

Record Date of Service																		
Record Elapsed Hours On Hour Meter																		
Clean Cabinet Filter(s)																		
Check Prescribed L/min. Flow Rate																		
EVERY 180 DAYS FOR IRC5LX (EVERY 90 DAYS FOR IRC10LX)																		
Check Oxygen Concentration **(UNITS WITHOUT *Sens*O_2)**																		
ANNUALLY, DURING PREVENTIVE MAINTENANCE SCHEDULE, OR BETWEEN PATIENTS																		
Clean/Replace Cabinet Filter(s)																		
Check Outlet HEPA Filter*																		
Check Compressor Inlet Filter*																		
Check Oxygen Concentration **(*Sens*O_2 MODELS)**																		
Check Power Loss Alarm																		
AS REQUIRED																		
Clean Heat Exchanger																		
Replace Exhaust Muffler																		
Rebuild Top End of Compressor																		

*Refer to Preventive Maintenance section of Service Manual.

SECTION 7—COMPRESSOR

⚠ WARNING

To prevent electrical shock, always disconnect concentrator from electrical outlet before servicing.

Replacing Compressor Assembly

NOTE: For this procedure, refer to FIGURE 7.1 and FIGURE 7.2.

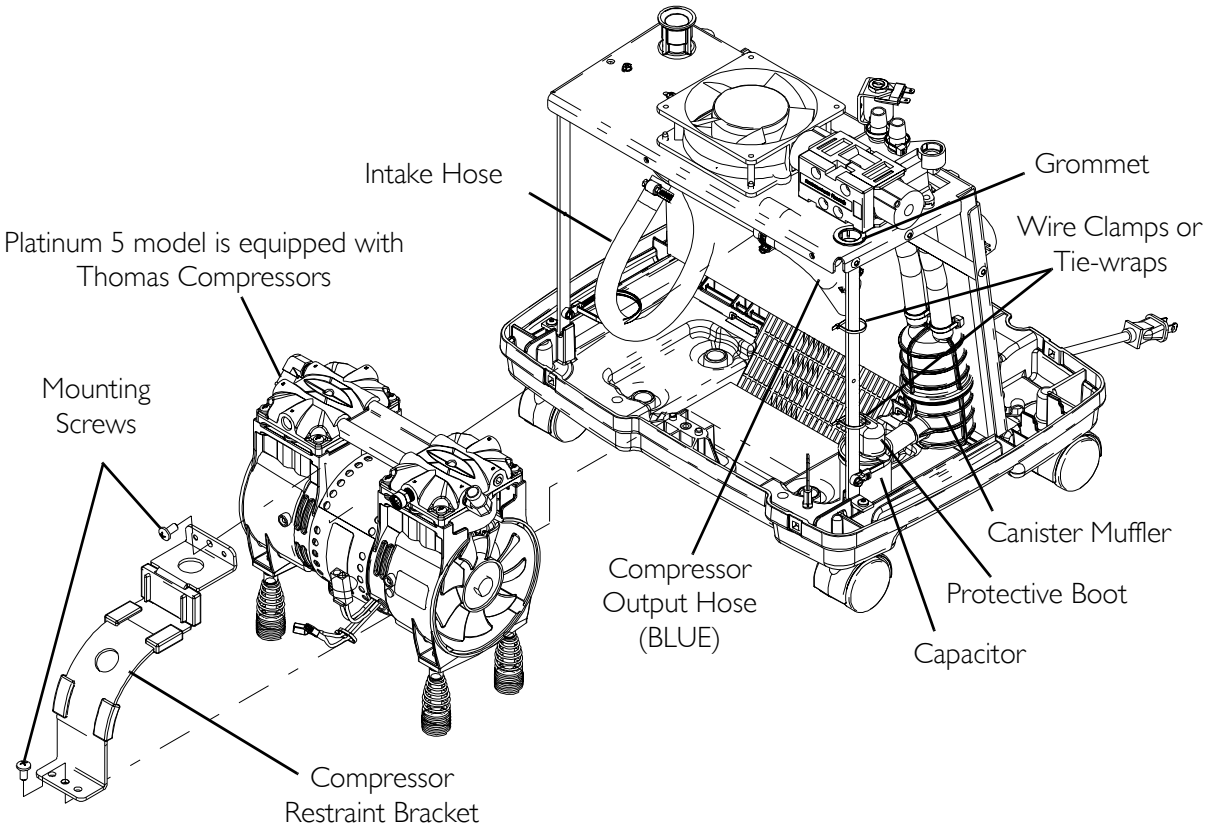
1. Unplug unit.
2. Remove the cabinet. Refer to Removing Cabinet on page 24.
3. Loosen clamps and disconnect intake hose and compressor output hose (blue) from compressor assembly.
4. Remove compressor wires from wire clamps or tie-wraps and disconnect motor connector from the main harness connector.

NOTE: Motor connector goes through grommet before reaching the main harness connector.

5. Remove protective boot on capacitor.
6. Disconnect capacitor wires from the top of the capacitor.

NOTE: Re-use the protective capacitor terminal boot if the replacement parts do not provide one.

7. Remove the two (2) mounting screws that secure the compressor restraint bracket and remove the bracket.
8. Tilt compressor assembly toward front of unit and lift out.
9. Reverse STEPS 3-8 to install new compressor assembly.
10. Reinstall the cabinet. Refer to Removing Cabinet on page 24.
11. Run unit and inspect for leaks. Refer to Leak Test on page 85.



NOTE: Models with canister muffler manufactured before 7/24/03 shown.

FIGURE 7.1 Replacing Compressor Assembly - Platinum 5 Model with Canister Muffler

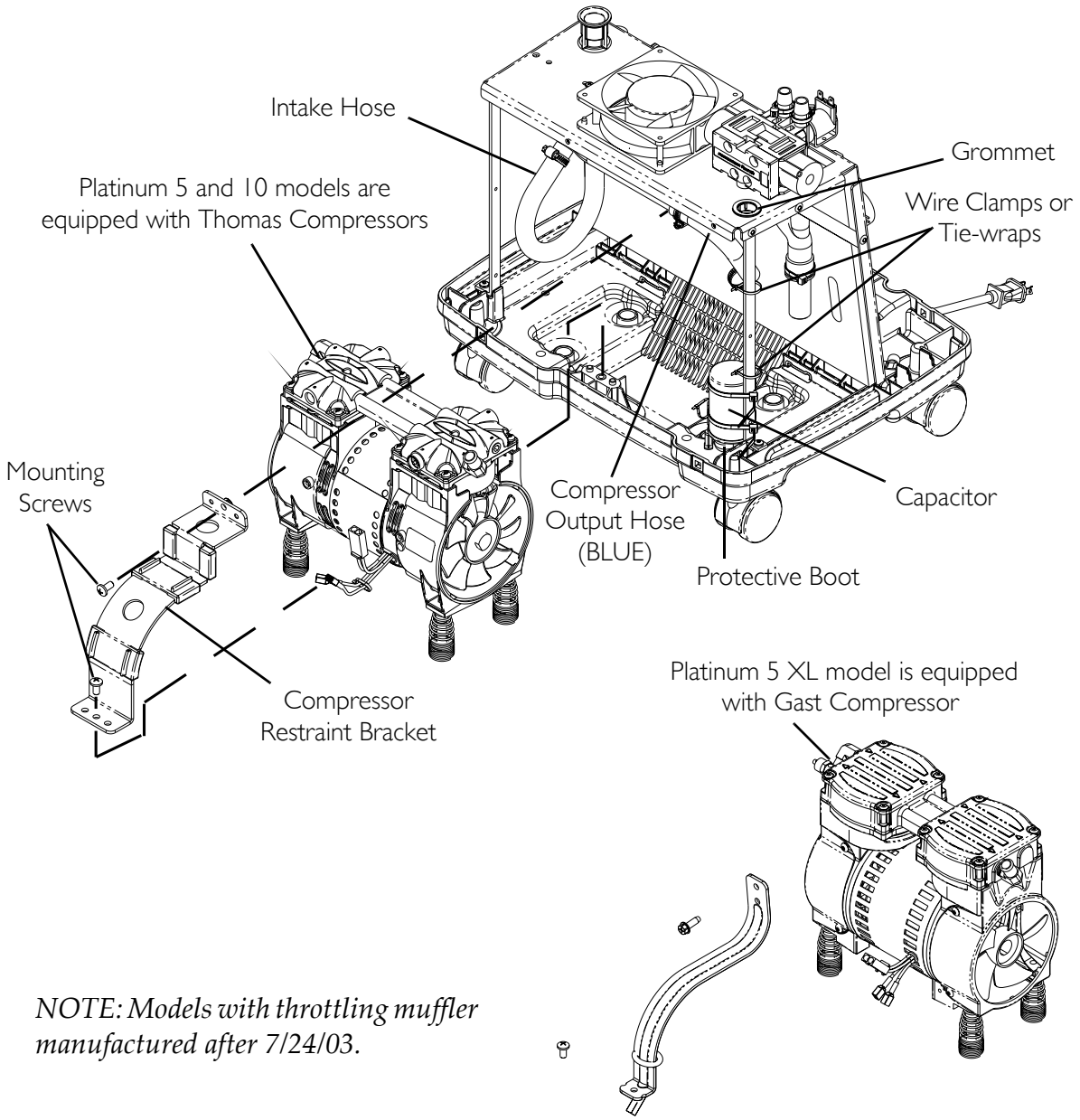

Intake Hose
Grommet
Platinum 5 and 10 models are equipped with Thomas Compressors
Wire Clamps or Tie-wraps
Mounting Screws
Compressor Output Hose (BLUE)
Capacitor
Protective Boot
Compressor Restraint Bracket
Platinum 5 XL model is equipped with Gast Compressor
NOTE: Models with throttling muffler manufactured after 7/24/03.

FIGURE 7.2 Replacing Compressor Assembly - Platinum 5 and 10 Models with Throttling Muffler

Replacing Capacitor

5-Liter Models (Platinum 5 and Platinum XL)

NOTE: For this procedure, refer to Detail "A" in FIGURE 7.3.

1. Unplug the unit.
2. Remove the cabinet. Refer to Removing Cabinet on page 24.
3. Remove protective boot to reveal capacitor wires.

4. Disconnect the spade connectors from the capacitor terminals (not shown).
5. Remove the screw that secures the capacitor clamp to the soundbox brace.
6. Remove the capacitor from the concentrator base assembly.
7. Install new capacitor by reversing STEPS 3-6.
8. Re-install the cabinet. Refer to Removing Cabinet on page 24.

10-Liter Model (Platinum 10)

NOTE: For this procedure, refer to Detail "B" in FIGURE 7.3.

1. Unplug the unit.
2. Remove the cabinet. Refer to Removing Cabinet on page 24.
3. Cut the two (2) tie-wraps that secure the capacitor to the soundbox brace.
4. Rotate capacitor to horizontal position.
5. Remove protective boot to reveal capacitor wires.
6. Disconnect the spade connectors from the capacitor terminals (not shown).
7. Remove the capacitor from the concentrator base assembly.
8. Install new capacitor by reversing STEPS 3-7.
9. Re-install the cabinet. Refer to Removing Cabinet on page 24.

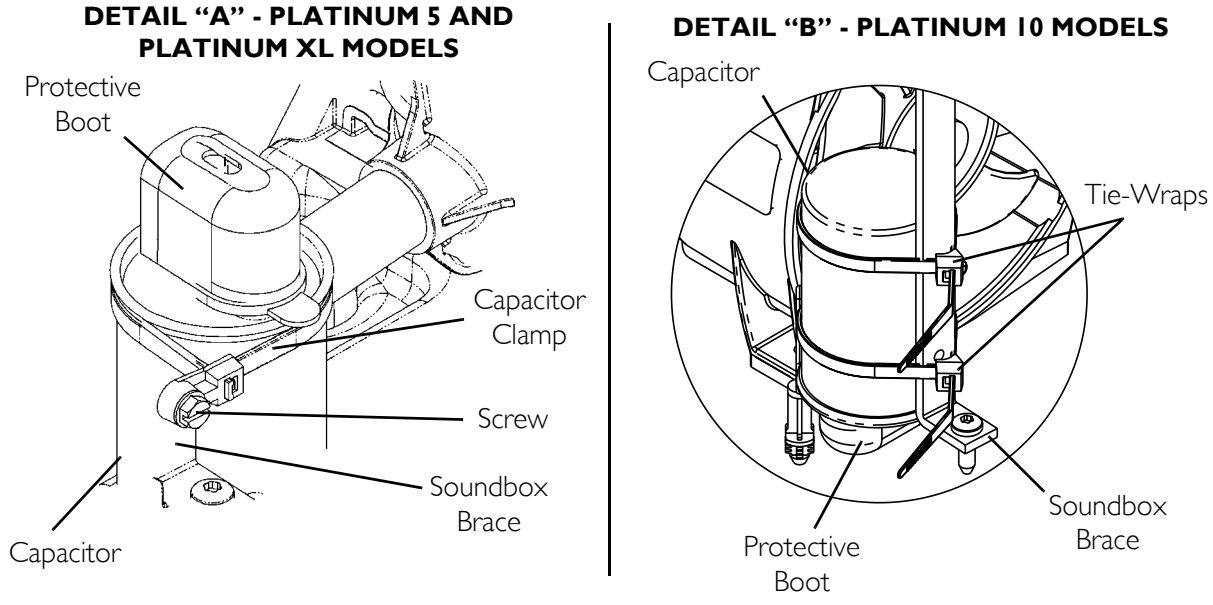


FIGURE 7.3 Replacing Capacitor

Rebuilding the Thomas Model 2650 and 2660 Compressor - Platinum 5 and 10 Models

⚠ WARNING

To prevent electrical shock, always disconnect concentrator from electrical outlet before servicing.

NOTE: Platinum XL uses a Gast compressor. Refer to Platinum XL Model - Rebuilding the Gast Compressor on page 43.

NOTE: Both compressor versions (models 2650 and 2660) use kit p/n 1109235.

NOTE: This kit is designed for rebuilding the Thomas Model 2650 and 2660 Series compressor. The model number is located on the front of the compressor. Compressor numbers for this kit are 2650CE37, 2650CE44, 2660CE37, and 2660CE50. If the compressor has a different model number than those listed, this kit will not work.

The Thomas 2650 and 2660 Series Compressor Rebuild Kit (p/n 1109235) contains the following:

DESCRIPTION	QUANTITY
Teflon® Piston Cups	2
Aluminum Piston Sleeves	2
Flapper Valves - Intake and Exhaust	4
Valve Keepers	4
O-Ring - Sleeve	2
Valve Plate Gaskets	2
Head Mounting Screws	8
Valve Screws	4
Valve Restraints	2
Piston Cup Retainer Screws	2

Tools Required:

- Torque wrench that has an inch-pound scale (for head screws, set screws, flapper valve screw, and pipe plugs)
- Torx® T-25 drive for torque wrench (for head screws)
- Torx T-27 drive for torque wrench (for retainer screws)
- 1/8-inch Allen wrench attachment for torque wrench (for eccentric set screw)
- 5/32-inch Allen wrench attachment for torque wrench
- Flat blade screwdriver attachment or 1/4-inch hex socket for torque wrench (for flapper valve screw)
- Phillips screwdriver attachment for torque wrench (for retainer screws)

CAUTION

DO NOT lubricate or use oil on any moving parts. The compressor eccentric uses a precision sealed bearing. Therefore, additional lubrication is not necessary.

Removing Compressor and Compressor Heads

Compressor

1. Unplug concentrator and carefully remove compressor from concentrator. Refer to Replacing Compressor Assembly on page 31.

Compressor Head Plate

NOTE: For this procedure, refer to FIGURE 7.4.

1. Clean loose dirt from the outside of the compressor.
2. Use the Torx® T-25 torque wrench and loosen the eight (8) head screws.
3. Note head placement before removing compressor heads.
4. Remove the compressor head plate.

Valve Plates

NOTE: For this procedure, refer to FIGURE 7.4.

1. Note the position of the plates before removing.
2. Lift off the valve plate on one side.
3. Repeat for the other side.

NOTE: Note the position of the tab on valve plate for reassembly.

NOTE: To avoid confusion, ONLY service one (1) end of the compressor at a time.

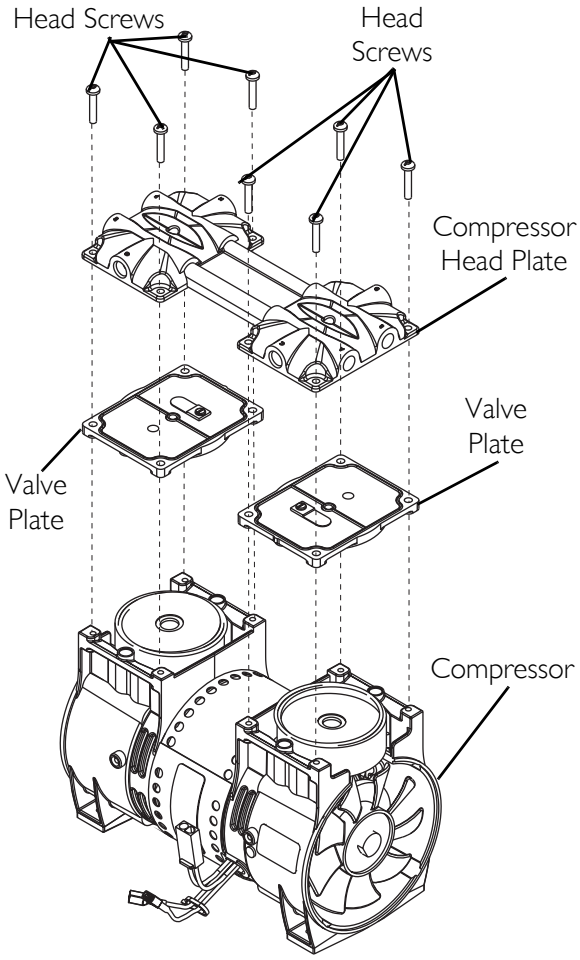


FIGURE 7.4 Removing Compressor and Compressor Heads - Rebuilding the Compressor - Compressor - Compressor Head Plate - Valve Plates

Fan

NOTE: For this procedure, refer to FIGURE 7.5.

1. Remove the fan by pulling it straight off the motor shaft grabbing the center housing. DO NOT pull the fan blades.

NOTE: Note position/orientation of fan for reassembly.

Connecting Rod and Eccentric Assembly

NOTE: For this procedure, refer to FIGURE 7.5.

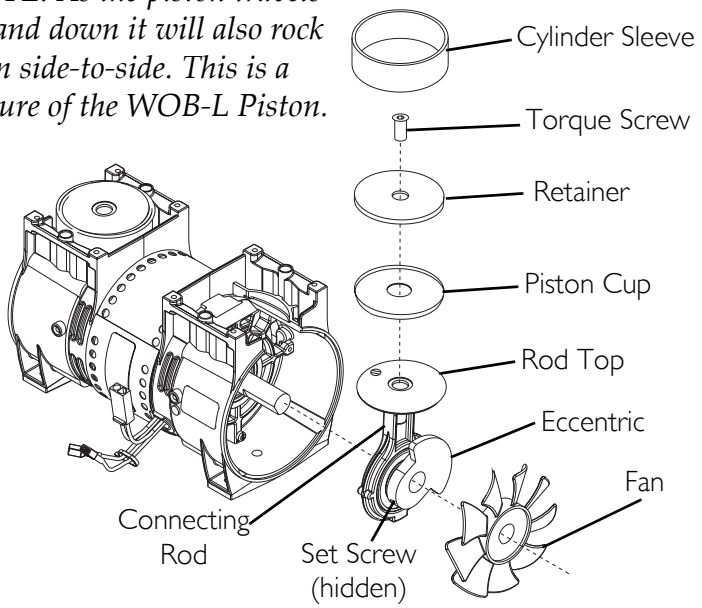
1. Rotate shaft to align the eccentric's set screw with the access hole in the bottom of the compressor housing.
2. Insert the 1/8-inch Allen wrench into the access hole in the bottom of the compressor housing (Detail "A" of FIGURE 7.5).
3. Loosen the set screw ¼ turn.
4. Rotate connecting rod to top dead center (180°) and slide the connecting rod/eccentric assembly off the shaft through the opening in the housing.
5. Secure the rod assembly in a fixture.
6. Remove the sleeve from the connecting rod and discard.

Piston Cup

NOTE: For this procedure, refer to FIGURE 7.5.

1. Remove the torque screw (discard) from the piston cup retainer (retain for reassembly).
2. Remove the piston cup (discard) and wipe debris from the top of the connecting rod with a clean damp cloth.

NOTE: As the piston travels up and down it will also rock from side-to-side. This is a feature of the WOB-L Piston.



DETAIL "A" - BOTTOM OF COMPRESSOR

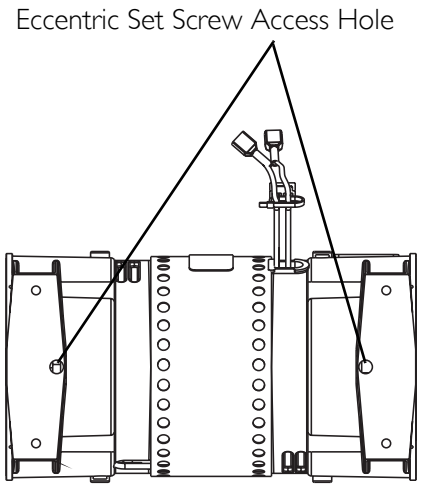


FIGURE 7.5 Removing Compressor and Compressor Heads - Rebuilding the Compressor - Fan - Connecting Rod and Eccentric Assembly - Piston Cup

O-ring, Intake Valve Keeper and Valve Keeper Strip

NOTE: For this procedure, refer to FIGURE 7.6.

1. Remove the O-ring, intake valve flapper and valve keeper strip from the bottom of the valve plate. Discard all.
2. Clean the bottom of the valve plate with a clean, soft cloth.

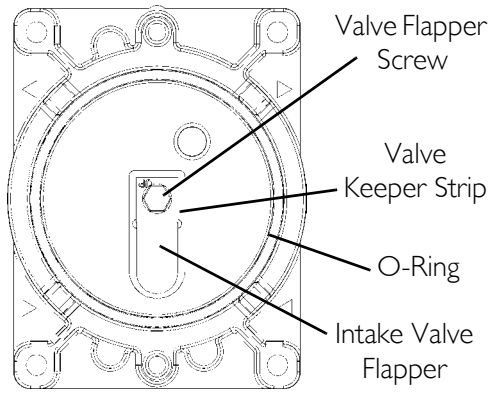


FIGURE 7.6 Removing Compressor and Compressor Heads - Rebuilding the Compressor - O-ring, Intake Valve Keeper and Valve Keeper Strip

Exhaust Valve Flapper, Valve Restraint and Valve Keeper Strip

NOTE: For this procedure, refer to FIGURE 7.7.

1. Remove the exhaust valve flapper, valve restraint and valve keeper strip from the top of the valve plate. Discard all.
2. Clean the top of the plate with a clean, soft cloth.

Gasket

NOTE: For this procedure, refer to FIGURE 7.7.

1. Remove the old gasket from the top of the valve plate and discard.
2. Clean the valve plate with a clean, soft cloth.

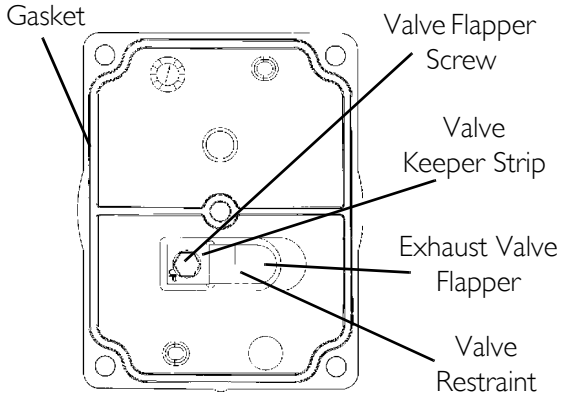


FIGURE 7.7 Removing Compressor and Compressor Heads - Rebuilding the Compressor - Exhaust Valve Flapper, Valve Restraint and Valve Keeper Strip

Rebuilding the Compressor

NOTE: Before reassembly, wipe any residue from all components with a clean soft cloth.

Gasket

NOTE: For this procedure, refer to FIGURE 7.7.

1. Install new gasket; seating the gasket firmly in the groove at the top of the valve plate with your finger or blunt object.

CAUTION

Make sure that the gasket is not twisted when seated in the groove of the top of the valve plate.

Exhaust Valve Flapper, Valve Restraint and Valve Keeper Strip

NOTE: For this procedure, refer to FIGURE 7.7.

1. Install the new exhaust valve flapper, valve restraint and valve keeper strip to the top of the valve plate with the valve flapper screw.

NOTE: Torque flapper screws to 12 inch-lbs.

O-ring, Intake Valve Flapper and Valve Keeper Strip

NOTE: For this procedure, refer to FIGURE 7.6.

1. Install the new valve keeper strip on top of the new intake valve flapper so that the word "UP" is visible. Fasten with the valve flapper screw.
2. Install the new O-ring, seating it firmly into the groove with your finger or blunt object.

NOTE: Torque flapper screws to 12 inch-lbs.

Piston Cup

NOTE: For this procedure, refer to FIGURE 7.5.

1. Place cylinder sleeve over rod top with smooth edge facing up.
2. Place piston cup on rod top making sure it is centered.
3. Place retainer on top of piston cup and seat retainer in rod top pocket, making sure the retainer and cup align properly along with screw holes.
4. Insert new screw into rod top and torque to 30 inch-lbs.

Connecting Rod/Eccentric Assembly

NOTE: For this procedure, refer to FIGURE 7.5.

1. With gloved-hand or clean cloth, pre-form piston cup if necessary.
2. Gently slide cylinder sleeve up and over cup to fully form it.

CAUTION

DO NOT lubricate or use oil on any moving parts. The compressor eccentric uses a precision sealed bearing.

DO NOT crimp the piston cup when you replace the sleeve. If the cup is crimped, it MUST be replaced.

3. With bearing side of connecting rod/eccentric assembly facing the center (motor) of the compressor, slide the assembly onto the shaft bringing it flush to the motor bearing.

NOTE: Make sure the eccentric set screw is positioned over the flat of the shaft.

4. Using the access hole, tighten set screw to 40 inch-lbs (Detail "A" of FIGURE 7.5).
5. Hold the sleeve down to the housing with one (1) hand and slowly rotate the eccentric with the other hand to ensure all the components are aligned properly.

Fan

NOTE: For this procedure, refer to FIGURE 7.5.

1. Reinstall the fan onto the shaft in original orientation.

Valve Plate

NOTE: For this procedure, refer to FIGURE 7.4.

1. With the sleeve located and firmly seated on the housing, replace the valve plate in the same manner as it was.
2. Repeat step 1 for other valve plate.

NOTE: Make sure the top edge of the sleeve locates in the O-ring groove in the bottom of the valve plate.

CAUTION

Make sure that the O-ring is not twisted when seated in the groove of the bottom of the valve plate.

Compressor Heads

NOTE: For this procedure, refer to FIGURE 7.4.

1. Place the heads on top of the valve plates.
2. Tighten the head screws in a criss-cross pattern to 40 inch-lbs.

Compressor

⚠ WARNING

To avoid personal injury or property damage, rotate the fan by hand prior to connecting the unit to a power source. Check for suction at the air inlet by placing your finger over the port as you rotate the fan. You should feel a slight suction with each rotation of the fan. If you DO NOT feel a suction but you feel or hear a thump as you turn the fan, DO NOT connect the unit to a power source. Review the assembly procedure for possible error.

NOTE: For this procedure, refer to FIGURE 7.8.

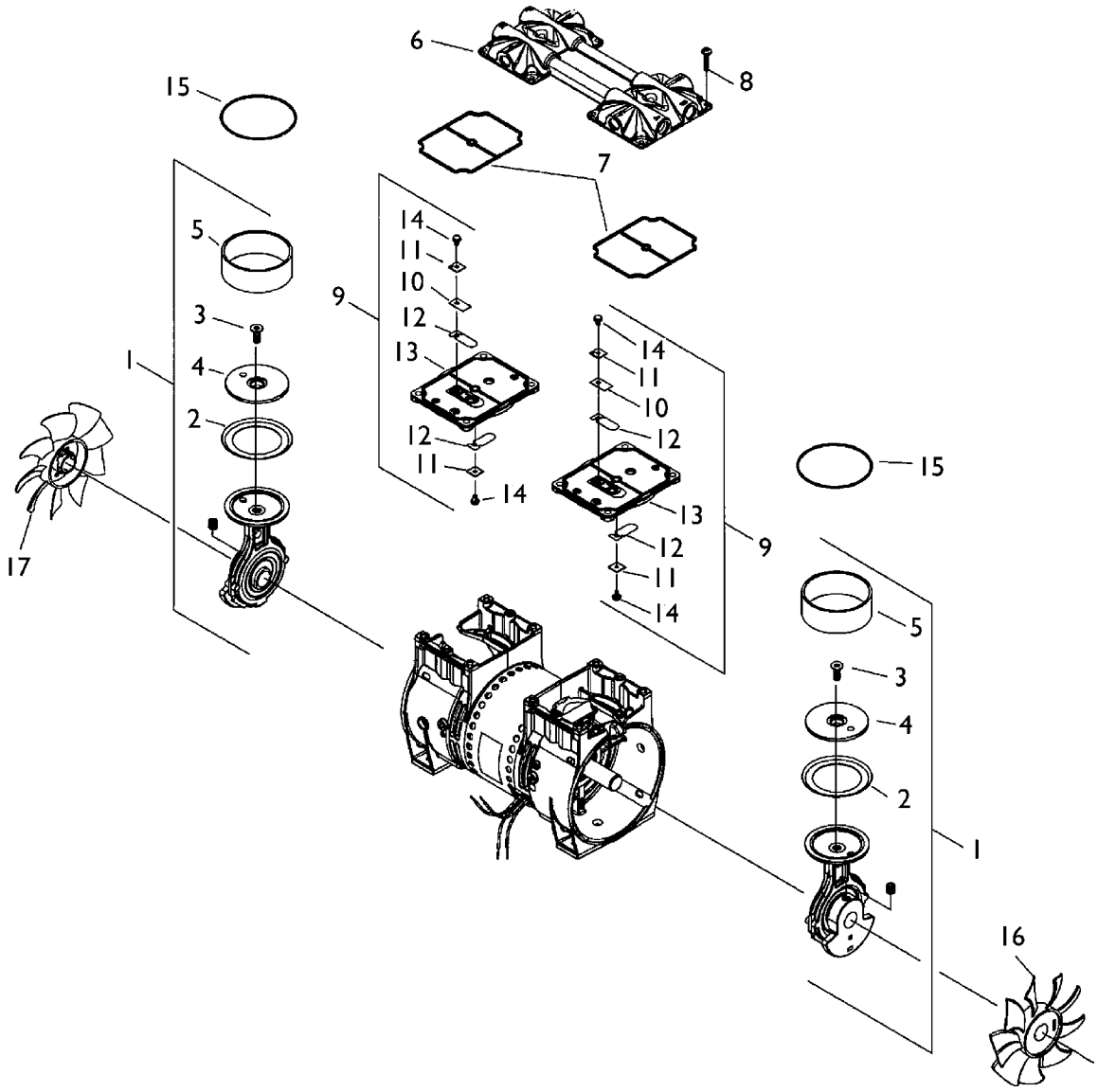
1. Reinstall compressor. Refer to Replacing Compressor Assembly on page 31.
2. Run unit and check for leaks around compressor hoses and compressor tubes. Refer to Leak Test on page 85.
3. Take pressure readings to ensure proper system pressures. Refer to Installing the Sieve Bed Pressure Tap-In Kit Installation and Checking Bed Pressure on page 92.

FIELD SERVICE PARTS LIST FOR THOMAS 2660 SERIES COMPRESSOR

ITEM NO.	PART NO.	QTY. PER ASM	QTY. PER UNIT	DESCRIPTION
1	See Chart	—	2	Connecting Rod, Eccentric & Bearing Assembly
2	624277	1	2	Piston Cup
3	625776	1	2	Screw - Piston Cup Retainer
4	626175	1	2	Piston Cup Retainer
5	618114	1	2	Cylinder Sleeve
6	See Chart	—	1	Head
7	623143	—	2	O-Ring - Head Gasket
8	625175	—	8	Screw - Head
9	621591	—	2	Valve Plate Assembly
	638574	—	1	Valve - Pressure Relief-Not Shown (115 V)
10	617177	1	2	Valve Restraint
11	617562	2	4	Valve Keeper Strip
12	621485	2	4	Valve Flapper - Intake & Exhaust
13	621641	1	2	Valve Plate
14	625094	2	4	Screw - Valve Flapper
15	623137	—	2	O-Ring Valve Plate
16	638281	—	1	Fan - Gray
17	638282	—	1	Fan - Black

2660CE37-989 COMPRESSOR

ITEM	PART NO.	QTY.	DESCRIPTION
1	607731	2	Connecting Rod, Eccentric & Bearing Assembly
6	665167	1	Head



COMPRESSOR PARTS LEGEND	
1. Connecting Rod, Eccentric & Bearing Assembly	10. Valve Restraint
2. Piston Cup	11. Valve Keeper Strip
3. Screw - Piston Cup Retainer	12. Valve Flapper - Intake & Exhaust
4. Piston Cup Retainer	13. Valve Plate
5. Cylinder Sleeve	14. Screw - Valve Flapper
6 Head	15. O-Ring Valve Plate
7. O-Ring - Head Gasket	16. Fan - Gray
8. Screw - Head	17. Fan - Black
9. Valve Plate Assembly	

FIGURE 7.8 Platinum 5, 10 Model - Compressor Exploded View

Platinum XL Model - Rebuilding the Gast Compressor

NOTE: Compressor model no. 82637.

NOTE: This compressor uses kit p/n 1125371.

To ensure the safe and successful installation of the Gast compressor, these instructions **MUST** be followed.

⚠ WARNING

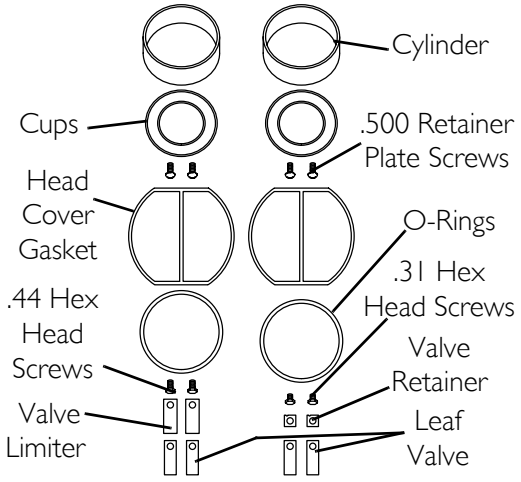
To prevent electrical shock, ALWAYS disconnect concentrator from electrical outlet before servicing.

After ANY adjustments, repair or service and BEFORE use, make sure that all attaching hardware is tightened securely.

NOTE: This kit is designed for rebuilding the Gast Compressor Model No. 82637. These compressors use this rebuild kit. The model number is located on the front of the compressor. If the model number does not begin with 82637, DO NOT install this kit.

This kit (p/n1125371) includes the following items:

DESCRIPTION	QUANTITY
Leaf Valve	4
Valve Retainer	2
Valve Limiter	2
6-32 x.44 Hex Screws	2
6-32 x.31 Hex Head Screws	2
O-Ring Cylinder	2
Head Cover Gaskets	2
Retainer Plate Screws 10-24 x.500	4
Cups	2
Cylinders	2



Tools Required:

- 1/8" Allen bit/wrench
- T-25 Torq bit/wrench
- T-27 Torq bit/wrench
- Small Flat Screwdriver
- Adjustable torque driver 0-50 inch-lbs.
- ¼-inch socket or nut driver.

Removing the Head Cover and Valve Plate Assembly

NOTE: For this procedure, refer to FIGURE 7.9.

1. Disengage the eight (8) Torx bolts that secure the head cover and valve plate assembly to the compressor (Detail "A").
2. Remove the head covers and valve plate assembly (Detail "B").

NOTE: Notice that the outside Torx screws are longer than the inside Torx screws.

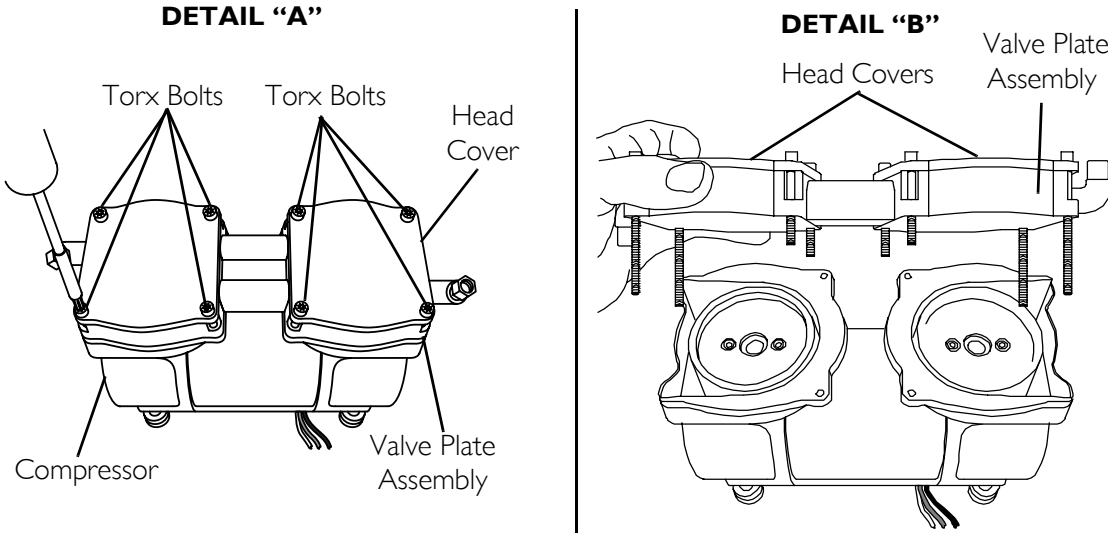


FIGURE 7.9 Removing the Head Cover and Valve Plate Assembly

Removing Head Cover Gaskets, O-Ring Gaskets, Exhaust Valves and Limiter

NOTE: For this procedure, refer to FIGURE 7.10 - FIGURE 7.13.

1. Remove and discard the old head cover gaskets on the top of the valve plate assembly.

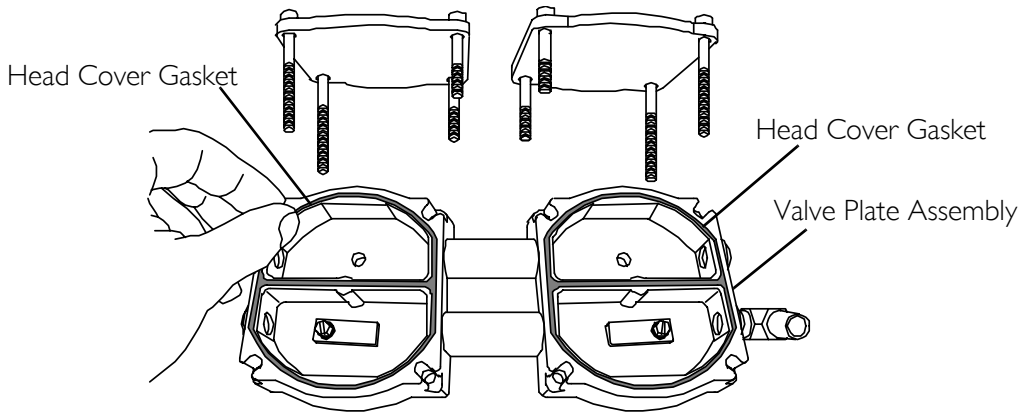


FIGURE 7.10 Removing Head Cover Gaskets, O-Ring Gaskets, Exhaust Valves and Limiter

2. Turn the valve plate assembly over.

CAUTION

When removing the old O-ring gaskets ensure not to damage the grooves they sit in.

3. Using a small screwdriver, remove the old O-ring gaskets from the valve plate assembly.

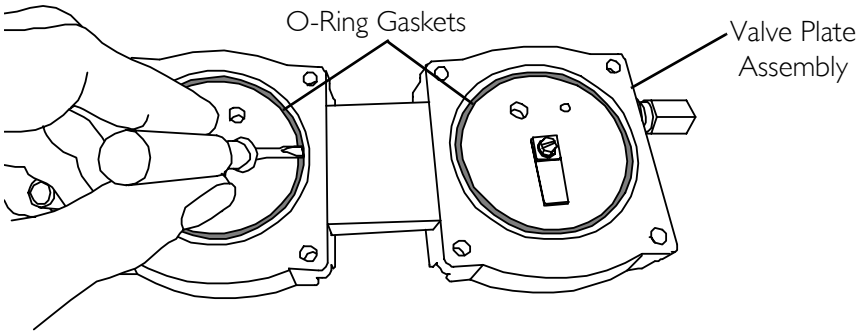


FIGURE 7.11 Removing the Old O-Ring Gaskets

4. Using a ¼-inch socket or nut driver, remove the screw, the valve retainer and intake valves from the valve plate assembly.

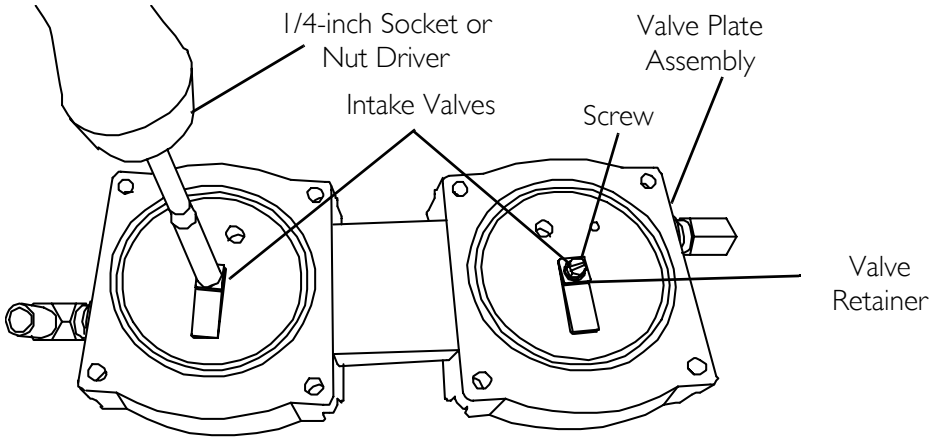


FIGURE 7.12 Removing the Intake Valves

5. Turn the valve plate assembly over.
6. Using a ¼-inch socket or nut driver, remove the screw, old exhaust valves and limiters of the valve plate chambers.

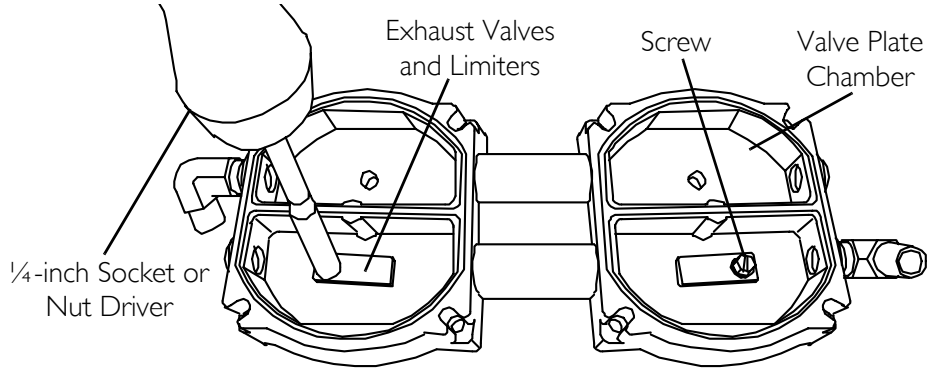


FIGURE 7.13 Removing the Old Exhaust Valves and Limiters

Installing the New Intake Valves, Exhaust Valves With Limiters

NOTE: For this procedure, refer to FIGURE 7.14 - FIGURE 7.16.

1. Find the new leaf valves, valve retainer, valve limiters and screws from the repair kit.

NOTE: Notice that the leaf valves and the valve retainers have a notch that should be oriented in the top left corner when installed (See Detail "A" in FIGURE 7.14).

2. Install the new intake valves and valve retainer, oriented as shown, on the bottom side of the valve plate assembly.
3. Center the intake valve over the port hole, secure with .31 hex head screw and tighten to 10-13 inch-lbs using a Torque wrench.

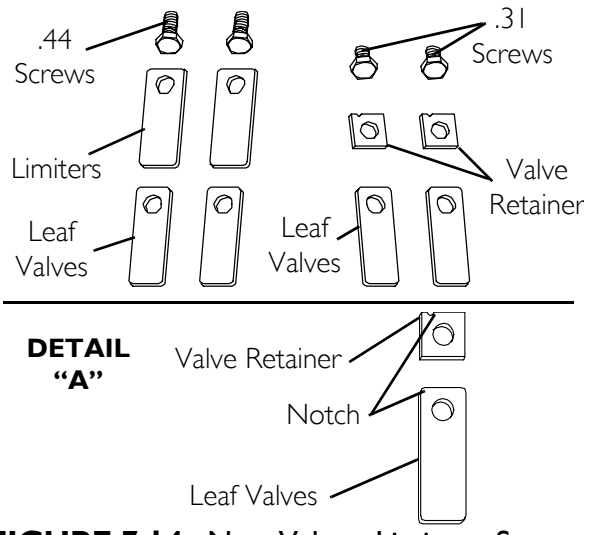


FIGURE 7.14 New Valves, Limiters, Screws

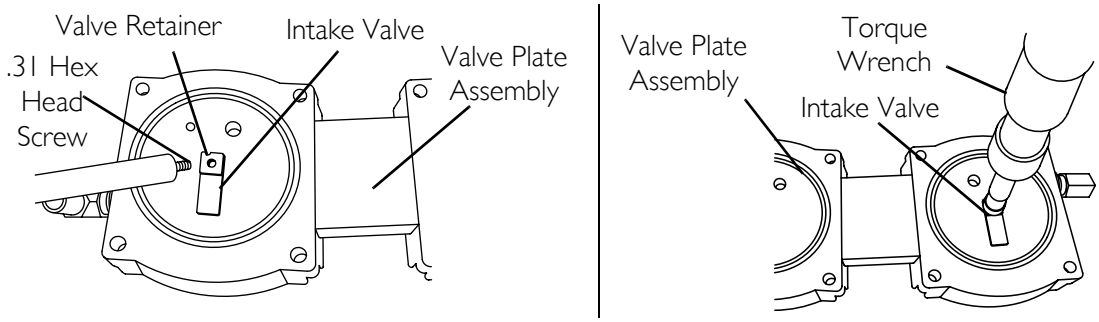


FIGURE 7.15 Installing New Intake Valves and Valve Retainer

4. Turn the valve plate assembly over and install the new exhaust valves with limiters in the valve plate assembly (FIGURE 7.16).

CAUTION

NEVER install the limiters on the bottom, or cylinder side, of the valve plate assembly - doing so will result in unit not working or damaging the unit.

5. Center the exhaust valve and limiter over the port hole secure with .44 hex head screw and torque to 10-13 inch-lbs.

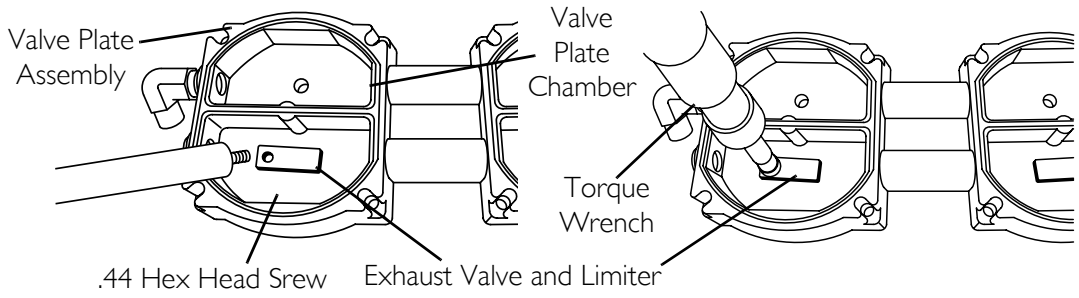


FIGURE 7.16 Installing New Exhaust Valves And Limiters

Removing the Existing Retainer Plate, Cups and Cylinders

NOTE: For this procedure, refer to FIGURE 7.17.

1. Using a 1/8-inch Allen wrench, remove the two (2) Allen head screws that secure the retainer plate, cup and cylinder to the top of the compressor piston rod (Detail "A"). Perform STEP 1 on both sides of the compressor.
2. Once the screws are removed, grasp the cylinder and lift up (Detail "B").

NOTE: The cylinder, cup and retainer plate should all come off together. Refer to FIGURE 7.18 for individual illustrations of cylinder, cup and retainer plate.

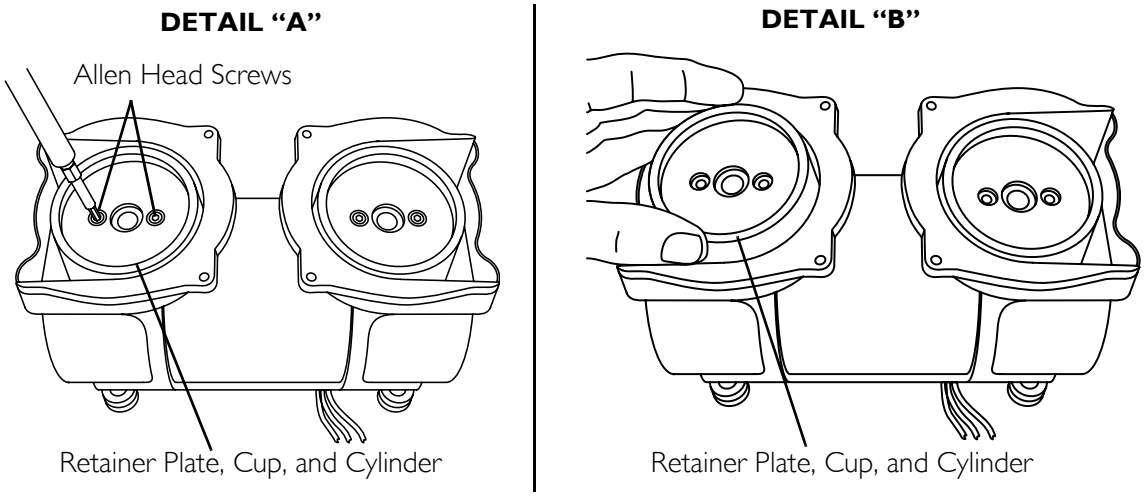


FIGURE 7.17 Removing the Existing Retainer Plate, Cups and Cylinders

Installing the New Retainer Plates, Cups and Cylinders

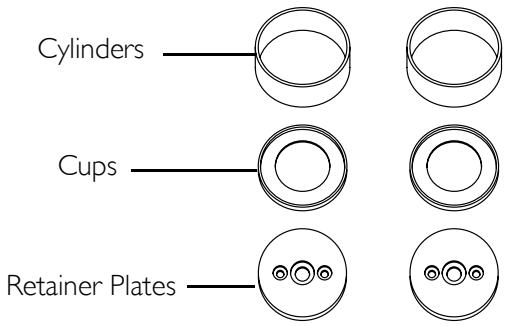


FIGURE 7.18 Identifying the New Retainer Plate, Cups and Cylinders

NOTE: For this procedure, refer to FIGURE 7.18 - FIGURE 7.20.

1. Find the new cylinders and cups in the repair kit (FIGURE 7.18).
2. Place the new retainer plate into the new cup (Detail "A" of FIGURE 7.19).

NOTE: Ensure that the lip of the cup is facing up.

3. Push the new retainer plate with cup into the new cylinder (Detail "B").
4. Place the new cylinder/retainer/cup assembly over the piston rod (Detail "A" of FIGURE 7.20).

NOTE: Ensure that the cylinder sits on the bracket.

5. When properly installed, the cylinders extend slightly above the bracket surfaces (Detail "B" of FIGURE 7.20).
6. Secure the new cylinder/retainer/cup assembly to the compressor piston with the new retainer plate screws (Detail "C" of FIGURE 7.20).
7. Using a torque wrench, torque retaining plate screws to 36 inch-lbs (Detail "C").

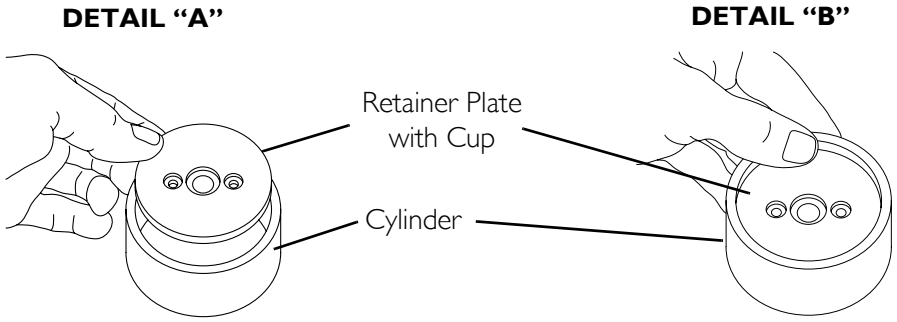


FIGURE 7.19 Installing the New Retainer Plates, Cups and Cylinders

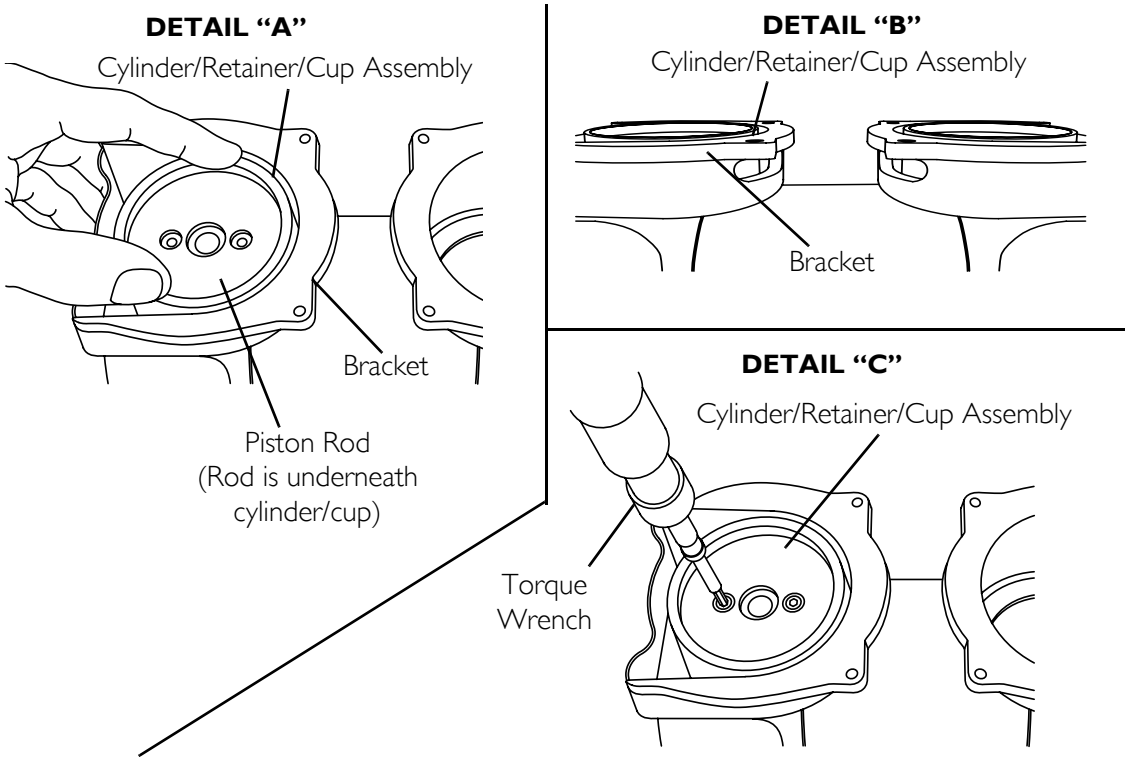


FIGURE 7.20 Installing the New the Cylinder onto the Compressor

Installing the New Head Cover Gaskets and O-Ring Gaskets

NOTE: For this procedure, refer to FIGURE 7.21.

1. Install the new cylinder O-rings on the bottom side of the valve plate assembly, pushing them into the groove (Detail "A").
2. On the top side of the valve plate assembly, install the new head cover gaskets, making sure they fit into the groove provided (Detail "B").

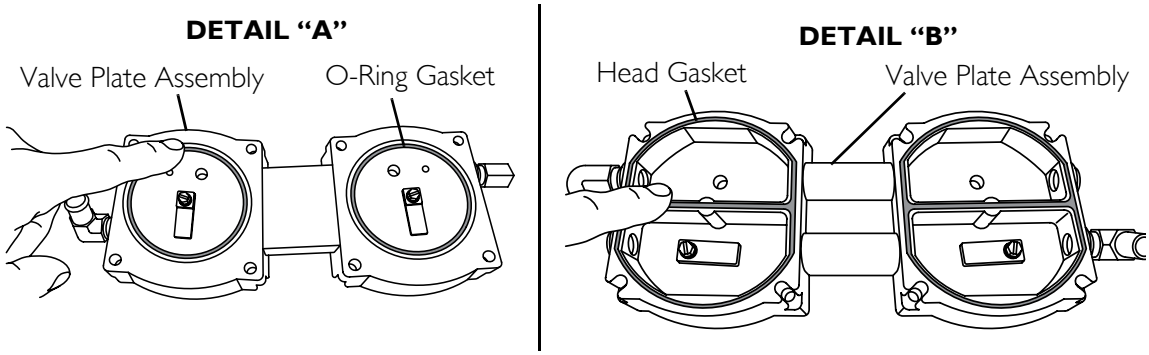


FIGURE 7.21 Installing the New Head Cover Gaskets and O-Ring Gaskets

Installing the Head Cover

NOTE: For this procedure, refer to FIGURE 7.22 and FIGURE 7.23.

1. Install the head cover onto the valve plate assembly.

NOTE: When installing the head cover onto the valve plate assembly, ensure the alignment pins, located on the underside of the head cover, engage into the alignment holes on the valve plate assembly.

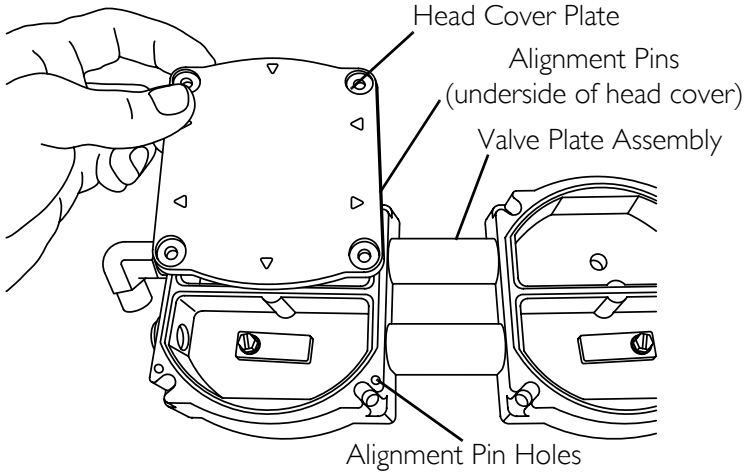


FIGURE 7.22 Install the New the Cylinder onto the Compressor

2. Install the head/valve plate assembly onto the unit.
3. Using a torque wrench, secure the head/valve plate assembly to the unit with the existing eight (8) Torx head screws. Tighten evenly and torque to 50 inch-lbs.

NOTE: Ensure that the cylinders fit into the O-ring grooves on both heads.

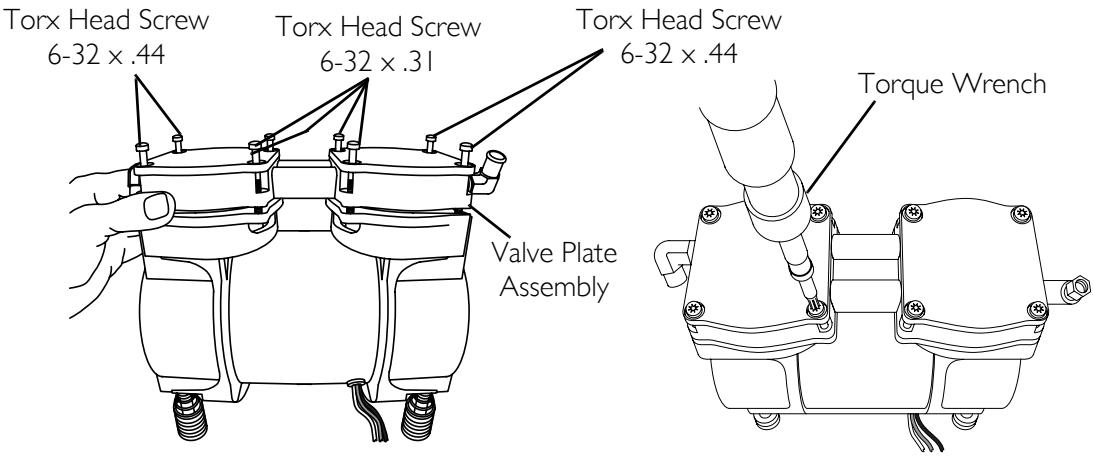


FIGURE 7.23 Install The Head Cover And Valve Plate Assembly Onto Compressor

CAUTION

Slowly rotate compressor motor by grasping and turning one of the fans. The motor shaft should rotate completely and freely. Any binding or stopping of the motor indicates a problem in the assembly. If this occurs, disassemble, review steps and reassemble. If problem persists, call Invacare at 1-800-832-4707.

SECTION 8—P.E. VALVE

Replacing P.E. Valve

⚠ WARNING

To prevent electrical shock, always disconnect concentrator from electrical outlet before servicing.

NOTE: For this procedure, refer to FIGURE 8.1.

1. Unplug unit.
2. Remove cabinet. Refer to Removing Cabinet on page 24.
3. Remove spade connectors from P.E. valve assembly.
4. Remove tie-wraps from P.E. valve tubing.
5. Remove P.E. valve assembly from tubing.

CAUTION

If P.E. valve is not to be installed immediately, plug the P.E. valve tubing to prevent sieve bed contamination.

6. Install new P.E. Valve assembly immediately, by reversing STEPS 3-5.

NOTE: After replacing P.E. valve, retiming of the concentrator may be necessary. Refer to Timing the Platinum 5, XL, and 10 Concentrators on page 82.

NOTE: To ensure proper orientation, the "out" port barb should face to the right side of the sieve bed when viewing the back of the unit.

7. Run unit and check for leaks. Refer to Leak Test on page 85.
8. Reinstall cabinet. Refer to Removing Cabinet on page 24.

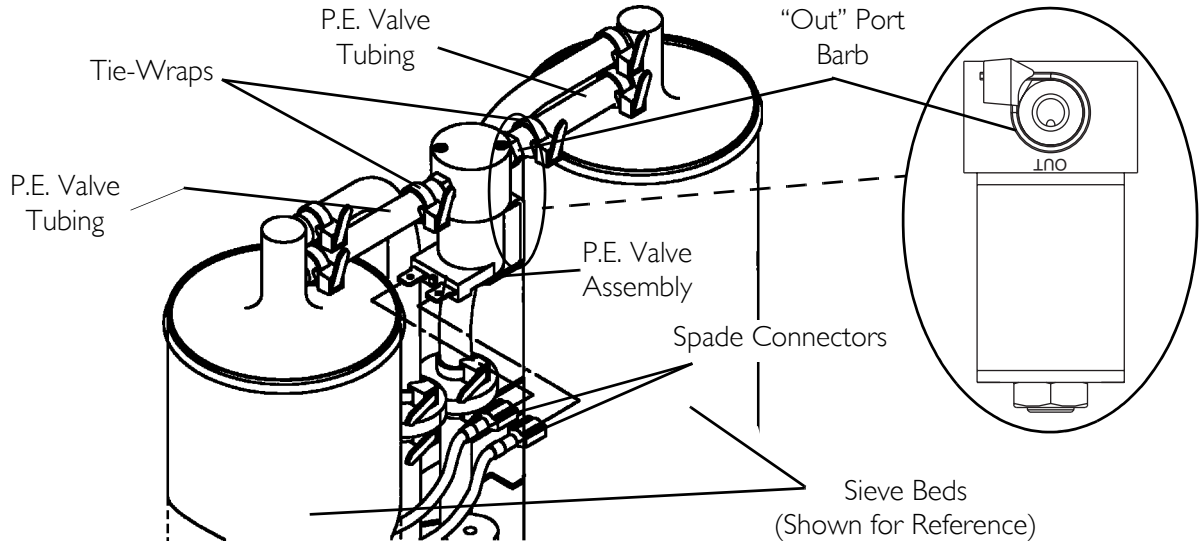


FIGURE 8.1 Replacing P.E. Valve

SECTION 9—SIEVE BEDS

Replacing Sieve Beds

⚠ WARNING

To prevent electrical shock, always disconnect concentrator from electrical outlet before servicing.

NOTE: For this procedure, refer to FIGURE 9.1.

NOTE: Always replace sieve beds in pairs to ensure that both beds are in optimum condition.

1. Unplug unit.
2. Remove cabinet. Refer to Removing Cabinet on page 24.
3. Remove tie-wraps and disconnect P.E valve and sieve bed tubing from top of sieve beds.
4. Remove large tie-wraps.
5. Loosen adjustable clamps on sieve beds. Slide clamps down below the adjustable clamp hangers.
6. Lift sieve beds up and rest sieve beds on top rear of base.
7. Remove tie-wraps and reinforced tubing from bottom of both sieve beds and remove sieve beds.

CAUTION

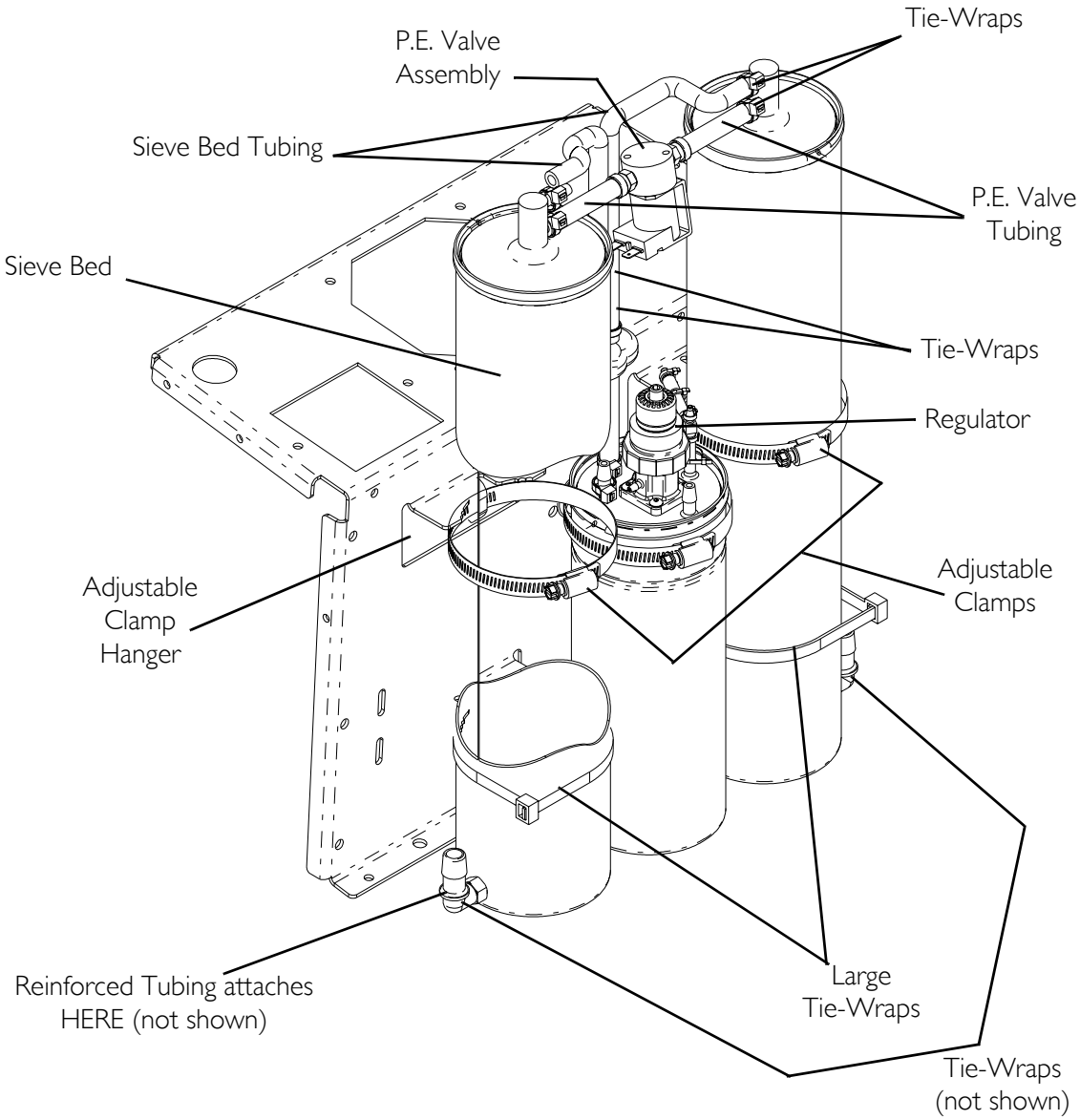
DO NOT remove plastic caps from new sieve bed fittings until ready to install new beds. Severe sieve contamination can occur if uncapped beds are exposed to air.

8. Remove plastic caps from the top and bottom fittings of the new sieve beds.
9. Install new sieve beds reversing STEPS 3-7.

NOTE: After replacing sieve beds, retiming is necessary. Refer to Timing the Platinum 5, XL, and 10 Concentrators on page 82.

10. Run unit and check for leaks. Refer to Leak Test on page 85.
11. Reinstall cabinet. Refer to Removing Cabinet on page 24.

5 Liter Models (Platinum 5 and XL)



10 Liter Model (Platinum 10)

NOTE: Sieve Bed assembly for the 10 liter is the same as the 5 liter model EXCEPT for the regulator shown here.

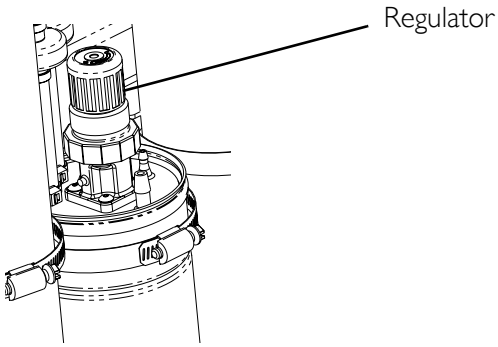


FIGURE 9.1 Replacing Sieve Beds

SECTION 10—CHECK VALVES

Replacing Check Valves

⚠ WARNING

To prevent electrical shock, always disconnect concentrator from electrical outlet before servicing.

NOTE: For this procedure, refer to FIGURE 10.1.

1. Unplug unit.
2. Remove cabinet. Refer to Removing Cabinet on page 24.

NOTE: Replace one (1) or both check valves when performing this procedure. The check valves are one-way directional and can be checked by passing air through them. Air should flow in one (1) direction only.

3. Loosen adjustable clamp on product tank, slide clamp down below the adjustable clamp hanger, and pull product tank forward to access check valve(s).
4. Remove tie-wraps from top and bottom of the check valve(s) and disconnect check valve(s) from ¼-inch PVC tubing.

⚠ WARNING

The check valves are one-way directional and MUST be installed correctly. The letters "VAC" are printed on the check valves. The check valves MUST be installed with the "VAC" on the underside of the check valve. Low system pressures and eventual bed contamination will result if check valves are not properly installed.

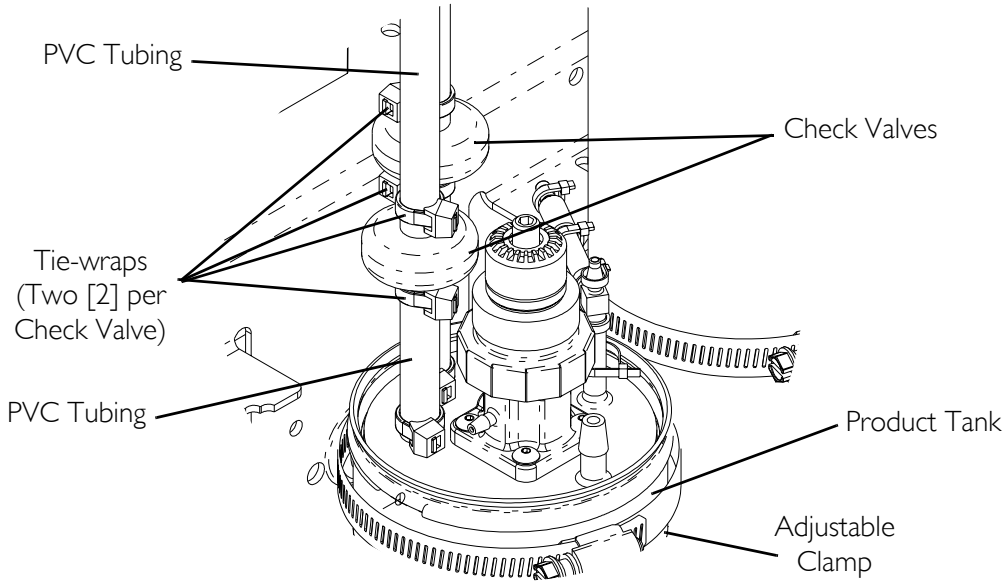
5. Install the new check valve(s) into the ¼-inch PVC tubing.
6. Make sure "VAC" is on the underside of the check valve to ensure proper orientation of check valves when installing.
7. Secure the check valve(s) by installing new tie-wraps to the ¼- inch PVC tubing where previously removed.

NOTE: If ¼-inch PVC tubing is damaged in any way, replace the section of ¼-inch PVC tubing before installing check valve(s).

NOTE: Ensure check valves are not crossed. Left barb product tank check valve goes to left barb on sieve bed. Right barb product tank check valve to right barb on sieve bed.

8. Run units and check for leaks. Refer to Leak Test on page 85.
9. Reinstall cabinet. Refer to Removing Cabinet on page 24.

5 Liter Models (Platinum 5 and XL)



10 Liter Model (Platinum 10)

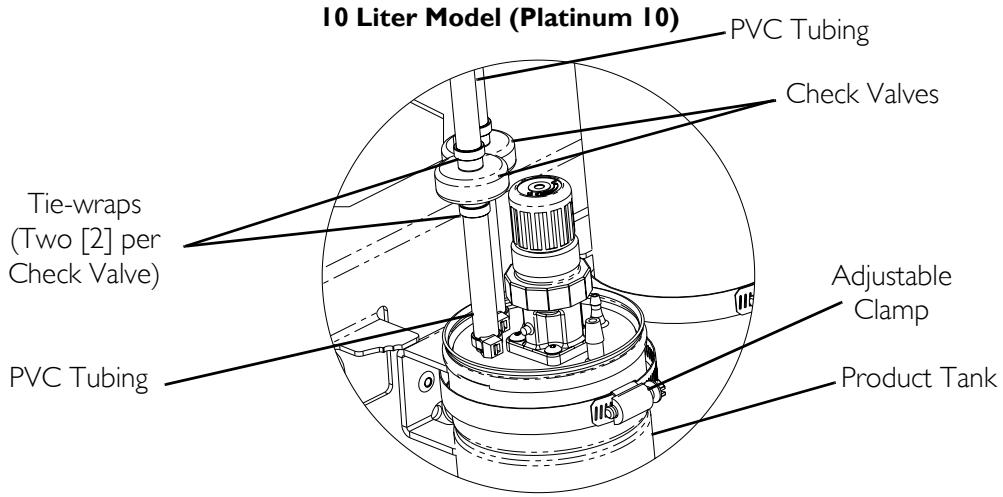


FIGURE 10.1 Replacing Check Valves

SECTION 11—REGULATOR

Replacing Regulator

⚠ WARNING

To prevent electrical shock, always disconnect concentrator from electrical outlet before servicing.

NOTE: For this procedure, refer to FIGURE 11.1.

1. Unplug unit.
2. Remove cabinet. Refer to Removing Cabinet on page 24.
3. Loosen adjustable clamp on product tank and slide clamp down below the adjustable clamp hanger (Detail "A").
4. Pull product tank back and up to access regulator.

NOTE: On concentrator models with the SensO$_2$ unit ONLY, remove the 1/8-inch tubing to oxygen sensor housing.

5. Remove the four (4) mounting screws that secure regulator to product tank cap (Detail "B" and "C").
6. Remove regulator from product tank lid ensuring that the O-rings are removed.

NOTE: Clean mounting surface of product tank cap. Ensure that the two (2) "O" rings for the NEW regulator are installed onto the ports (underside) of the NEW regulator before installation.

⚠ WARNING

Ensure proper installation of regulator. Note flow arrow on regulator. This MUST face toward the front of unit or flow will be interrupted causing system shutdown.

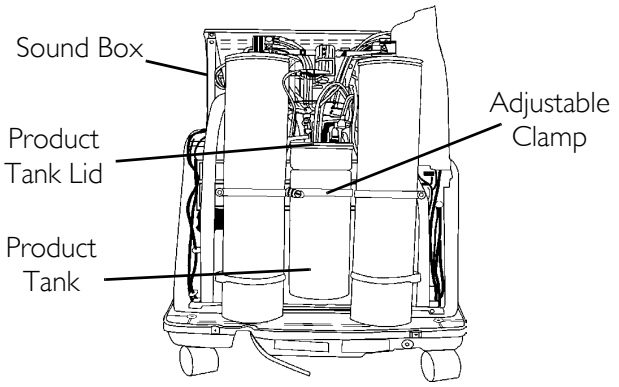
7. Install new regulator onto product tank by reversing STEPS 5 and 6.
8. Torque mounting screws to 5 ± 1 inch-lbs.
9. Re-install product tank and secure with the adjustable clamp.

NOTE: On units with SensO2, reinstall 1/8-inch tubing to oxygen sensor housing.

10. Adjust regulator pressure if necessary. Refer to Adjusting Regulator on page 58.
11. Run unit and check for leaks. Refer to Leak Test on page 85.

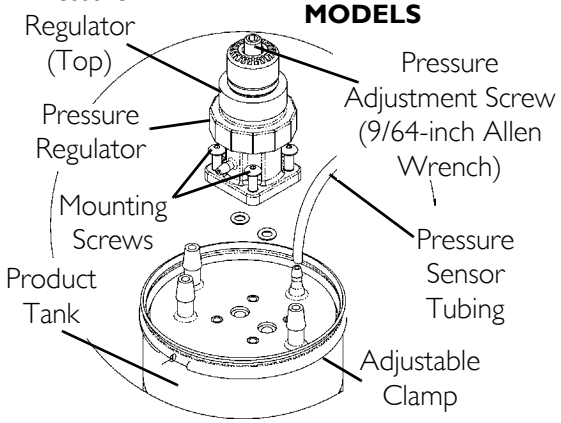
Reinstall cabinet. Refer to Removing Cabinet on page 24.

DETAIL "A"



NOTE: The adjustable clamp hanger is not shown. It is located behind the product tank and is attached to the sound box.

DETAIL "B" - 5 LITER MODELS



NOTE: Sieve Beds removed for clarity.

DETAIL "C" - 10 LITER MODELS

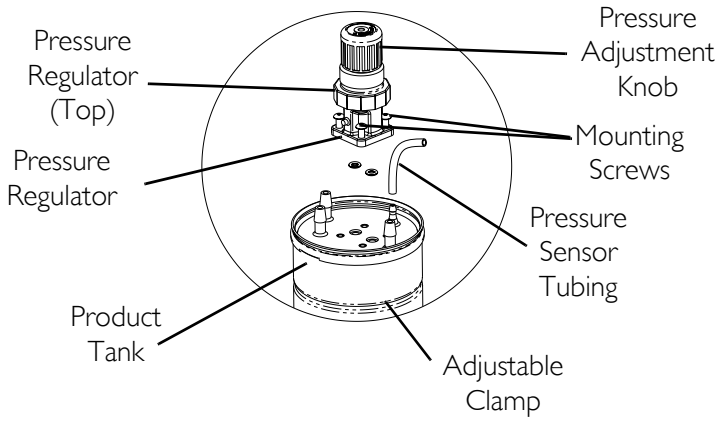


FIGURE 11.1 Replacing Regulator

Adjusting Regulator

NOTE: For this procedure, refer to Detail "C" in FIGURE 11.1.

1. Turn unit on (I).
2. Install pressure gauge onto oxygen outlet.

NOTE: Use a 0 - 30 p.s.i. pressure gauge.

NOTE: Check O_2 pressure at oxygen outlet. It should read a steady five (5) p.s.i. ± 0.5 p.s.i. If pressure is not in specification, proceed to STEP 3. If pressure falls within specification, no adjustment is needed.

3. Unplug unit.
4. Remove cabinet. Refer to Removing Cabinet on page 24.
5. Move product tank back to access regulator. Refer to Replacing Regulator on page 56.
6. Plug unit in and turn power switch on (I).
7. Locate the pressure adjustment screw for 5 liter models (adjustment knob for l0 liter model) in center of pressure regulator top.
8. For five (5) liter models only insert a 9/64-inch Allen wrench into the pressure adjustment screw.
9. While reading pressure gauge, do one (1) of the following:
   - Turn pressure adjustment screw or adjustment knob, clockwise to increase output pressure or,
   - Turn pressure adjustment screw or adjustment knob, counterclockwise to decrease output pressure.
10. Adjust until pressure reads a steady five (5) p.s.i. ± 0.5 p.s.i.
11. Once required pressure is achieved, reinstall cabinet. Refer to Removing Cabinet on page 24.
12. Refer to Troubleshooting on page 17 if you are unable to adjust or maintain five (5) p.s.i. ± 0.5 p.s.i.

NOTE: After ten (10) minutes of run time, retest output pressure of concentrator to insure proper operation and/or spec levels.

SECTION 12—HEAT EXCHANGER

Replacing Heat Exchanger

⚠ WARNING

To prevent electrical shock, always disconnect concentrator from electrical outlet before servicing.

NOTE: For this procedure, refer to FIGURE 12.1.

1. Unplug unit.
2. Remove cabinet. Refer to Removing Cabinet on page 24.

CAUTION

Use care not to deform heat exchanger when installing, removing or cleaning.

3. Loosen the adjustable clamps on the compressor output hose (BLUE) and valve manifold input hoses at the front and rear of the heat exchanger.
4. Remove screw securing heat exchanger standoff to the soundbox.
5. Move the heat exchanger out to access the hoses and remove them from the heat exchanger.
6. Remove heat exchanger.
7. Reverse STEPS 3-6 to install new heat exchanger.
8. Run unit and check for leaks. Refer to Leak Test on page 85.
9. Reinstall cabinet. Refer to Removing Cabinet on page 24.

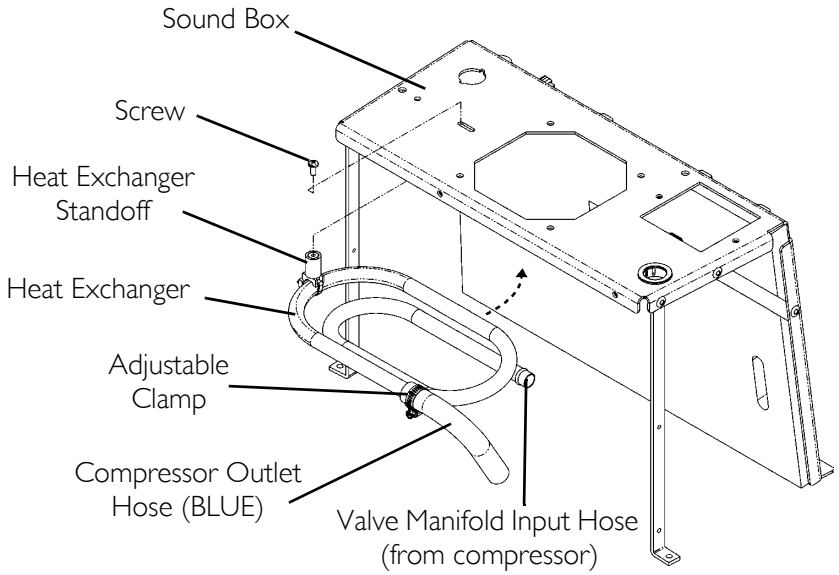


FIGURE 12.1 Replacing Heat Exchanger

SECTION 13—CONTROL PANEL

Removing Control Panel

⚠ WARNING

To prevent electrical shock, always disconnect concentrator from electrical outlet before servicing.

NOTE: For this procedure, refer to FIGURE 13.1.

Tools Required:

- Diagonal Cutters
- Flathead Screwdriver
- ¼-inch ratchet, ¼-inch socket, and ¼-inch extension
- Pliers
- Tie-wraps

1. Unplug unit.
2. Remove cabinet. Refer to Cabinet on page 24.
3. Remove the two (2) upper mounting screws that secure the control panel.
4. Loosen the two (2) lower mounting screws that secure the control panel.

⚠ WARNING

Use caution when removing the pressure sensor tubing from the product tank. Injury could result when tubing disconnects from product tank.

5. Cut the tie-wraps that secure the 1/8-inch I.D. pressure sensor tubing to the product tank connection and remove tubing.
6. Remove the ¼-inch I.D. tubing from the top and bottom barbed fittings of the flowmeter.
7. Cut tie wrap and remove ¼-inch I.D. tubing from the patient outlet barbed fitting behind the control panel.

NOTE: On SensO$_2$ models the oxygen sensor tube attached to the side of the regulator must also be released.

8. Disconnect the nine (9) or ten (10)-pin connector from P.C. board.
9. Disconnect the eight (8)-pin connector from P.C. board.
10. Disconnect the transformer harness connector.

NOTE: Before performing STEP 10, code all wires to ensure correct reinstallation.

11. Remove spade connectors from circuit breaker, hour meter and On/Off (I/O) switch. (Jumper wire harness from On/Off switch to circuit breaker does not have to be removed).
12. Remove control panel and reverse STEPS 3-10 to re-install control panel.
13. Run unit and check for leaks at pressure sensor tubing on product tank cap. Refer to Leak Test on page 85
14. Reinstall cabinet. Refer to Removing Cabinet on page 24.

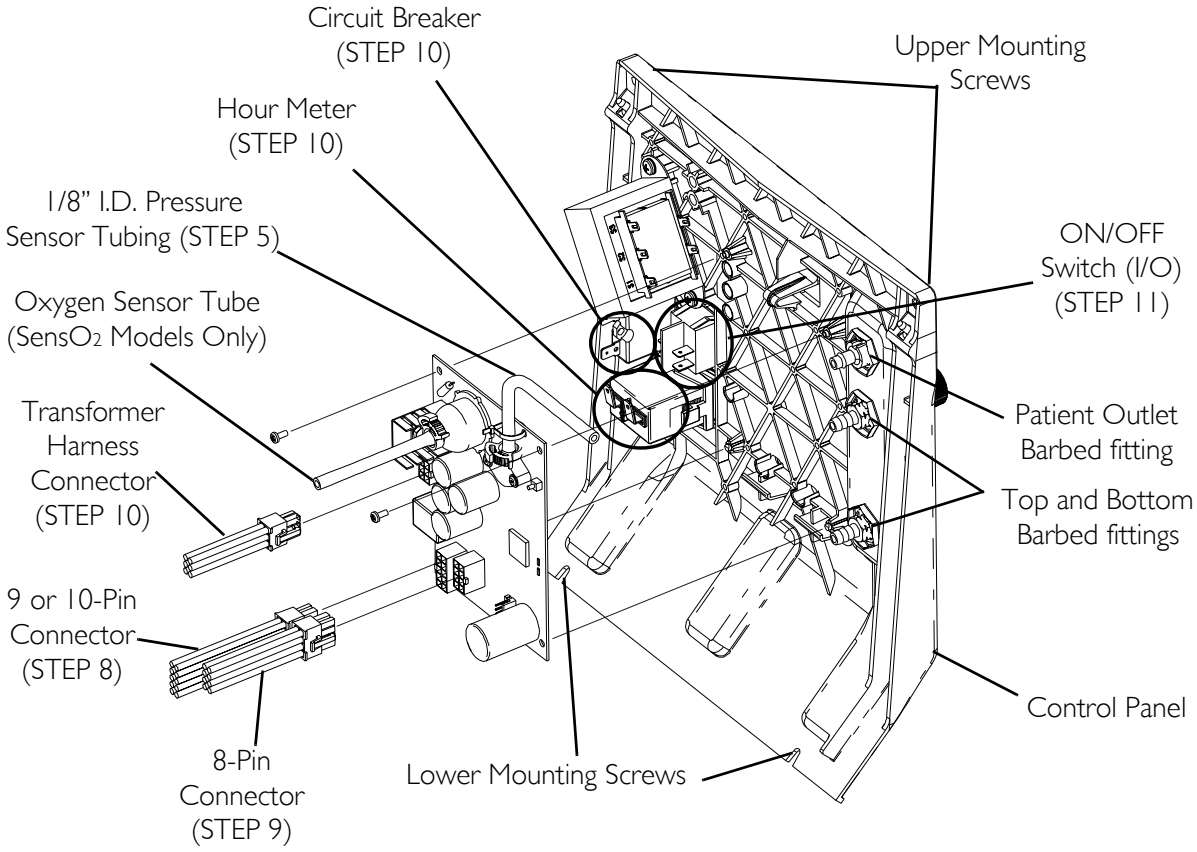

Circuit Breaker (STEP 10)
Upper Mounting Screws
Hour Meter (STEP 10)
1/8" I.D. Pressure Sensor Tubing (STEP 5)
ON/OFF Switch (I/O) (STEP 11)
Oxygen Sensor Tube (SensO2 Models Only)
Patient Outlet Barbed fitting
Transformer Harness Connector (STEP 10)
Top and Bottom Barbed fittings
9 or 10-Pin Connector (STEP 8)
Control Panel
8-Pin Connector (STEP 9)
Lower Mounting Screws

FIGURE 13.1 Removing Control Panel

SECTION 14—COOLING FAN

Replacing Cooling Fan

⚠ WARNING

To prevent electrical shock, always disconnect concentrator from electrical outlet before servicing.

NOTE: For this procedure, refer to FIGURE 14.1.

1. Unplug unit.
2. Remove cabinet. Refer to Cabinet on page 24.
3. Remove control panel. Refer to Removing Control Panel on page 60.
4. Remove compressor assembly. Refer to Replacing Compressor Assembly on page 31 or Replacing Capacitor on page 33.
5. Remove heat exchanger. Refer to Replacing Heat Exchanger on page 59.

NOTE: Heat exchanger must be removed before removing the mounting screws.

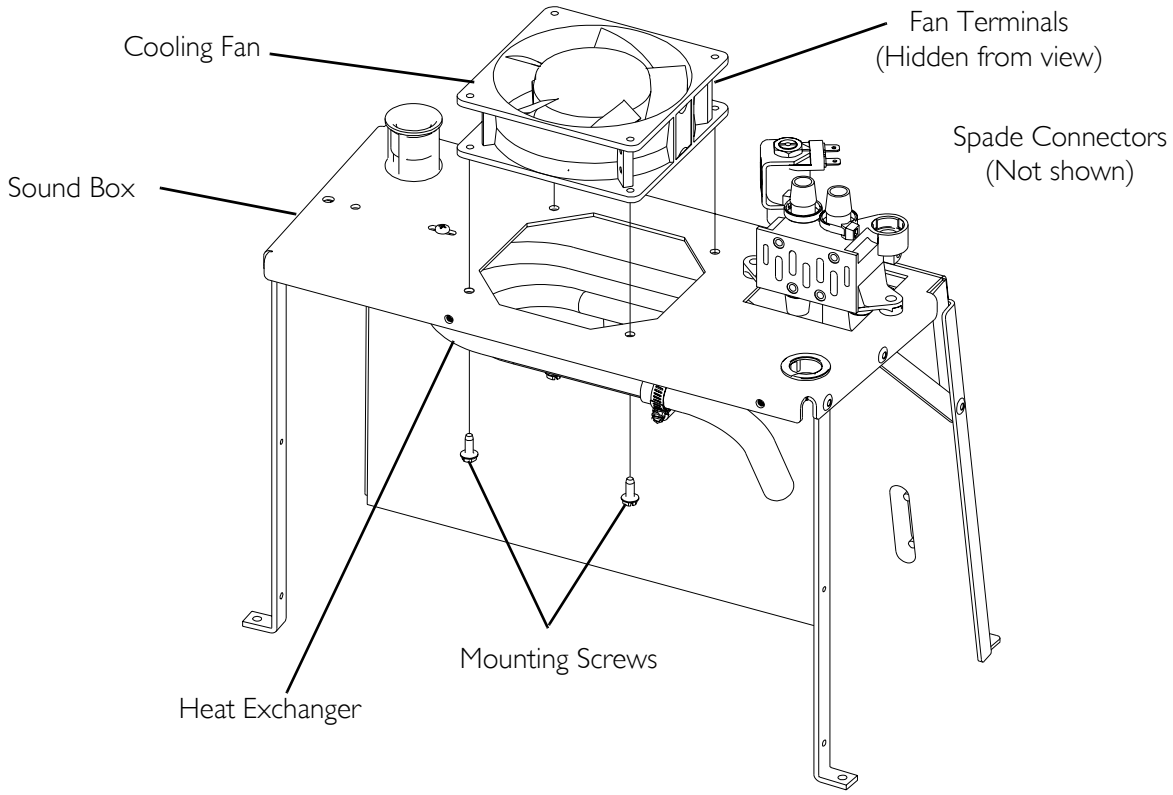
6. Disconnect and remove spade connectors from fan terminals on back side of cooling fan (not shown).
7. Remove four (4) mounting screws securing the cooling fan to the sound box.
8. Remove existing cooling fan.
9. Install new cooling fan.

NOTE: Run the self-threading mounting screws through the fan housing holes to cut the threads and remove them before mounting the fan for ease of installation.

CAUTION

Fan MUST be positioned properly so air from the fan blows DOWN onto the compressor (see air flow arrow on back of fan) or damage to the unit will occur.

10. Reinstall heat exchanger. Refer to Replacing Heat Exchanger on page 59.
11. Reinstall compressor. Refer to Replacing Compressor Assembly on page 31 or Replacing Capacitor on page 33.
12. Reinstall control panel. Refer to Removing Control Panel on page 60.
13. Plug unit in and check for leaks. Refer to Leak Test on page 85.
14. Run unit for at least 30 minutes. If unit runs properly, replace cover. If not, call Invacare Technical Service.
15. Reinstall cabinet. Refer to Cabinet on page 24.



NOTE: Illustration depicts Platinum 5. Replacement of the cooling fan is the same for Platinum 5, XL, and Platinum 10.

NOTE: Heat exchanger MUST be removed before removing the mounting screws.

FIGURE 14.1 Replacing Cooling Fan

SECTION 15—P.C. BOARD

Replacing P.C. Board

⚠ WARNING

To prevent electrical shock, always disconnect concentrator from electrical outlet before servicing.

CAUTION

Only qualified service technicians should make any changes to this equipment.

Follow these pre-cautions to prevent damage to the P.C. boards:

Before handling any P.C. boards, you need to be properly grounded to prevent static damage to the components of the board. A Static Cuff must be worn and properly grounded using an alligator clip. Electrical conduit or a water pipe is normally sufficient when a known good ground is not available. Care should be taken to ensure that the alligator clip contacts with bare metal surface.

When removing quick disconnects terminals, DO NOT pull on wire itself as damage to the connection may occur. Hold down the P.C. board with one hand and use an upward force with a slight rocking motion to remove the terminals.

Before installing any P.C. boards, ensure that all insulators are in place.

NOTE: For this procedure, refer to FIGURE 15.1.

1. Unplug unit.
2. Remove cabinet. Refer to Removing Cabinet on page 24.
3. Remove control panel. Refer to Removing Control Panel on page 60.
4. Disconnect the following:
   A. Wiring Harness from nine (9) or ten (10)-pin wiring harness connector
   B. Wiring Harness from eight (8)-pin wiring harness connector
   C. Transformer harness connector

⚠ WARNING

DO NOT remove sensor tubing from P.C. Board. Remove from tee fitting or regulator ONLY. Damage to sensor assembly could occur. A faulty sensor may result in improper oxygen delivery and harm to the user.

   D. Pressure sensor tubing from product tank, not P.C. Board.
   E. If applicable, Oxygen Sensor tubing from Regulator Fitting. Refer to Replacing Regulator on page 56.

5. Remove the two (2) mounting screws on top corners of P.C. board. Bend latching tab up to release P.C. board from control panel.
6. Position new P.C. board.
7. Reverse STEPS 4 and 5. Be sure all tie-wraps removed from tubing connections are replaced.
8. Reinstall control panel. Refer to Removing Control Panel on page 60.
9. Run concentrator to ensure unit operates to specifications.
10. After replacing P.C. board, retiming may be necessary. Refer to Timing the Platinum 5, XL, and 10 Concentrators on page 82.
11. Check for leaks at pressure sensor tubing on product tank cap. Refer to Leak Test on page 85.
12. Reinstall cabinet. Refer to Removing Cabinet on page 24.

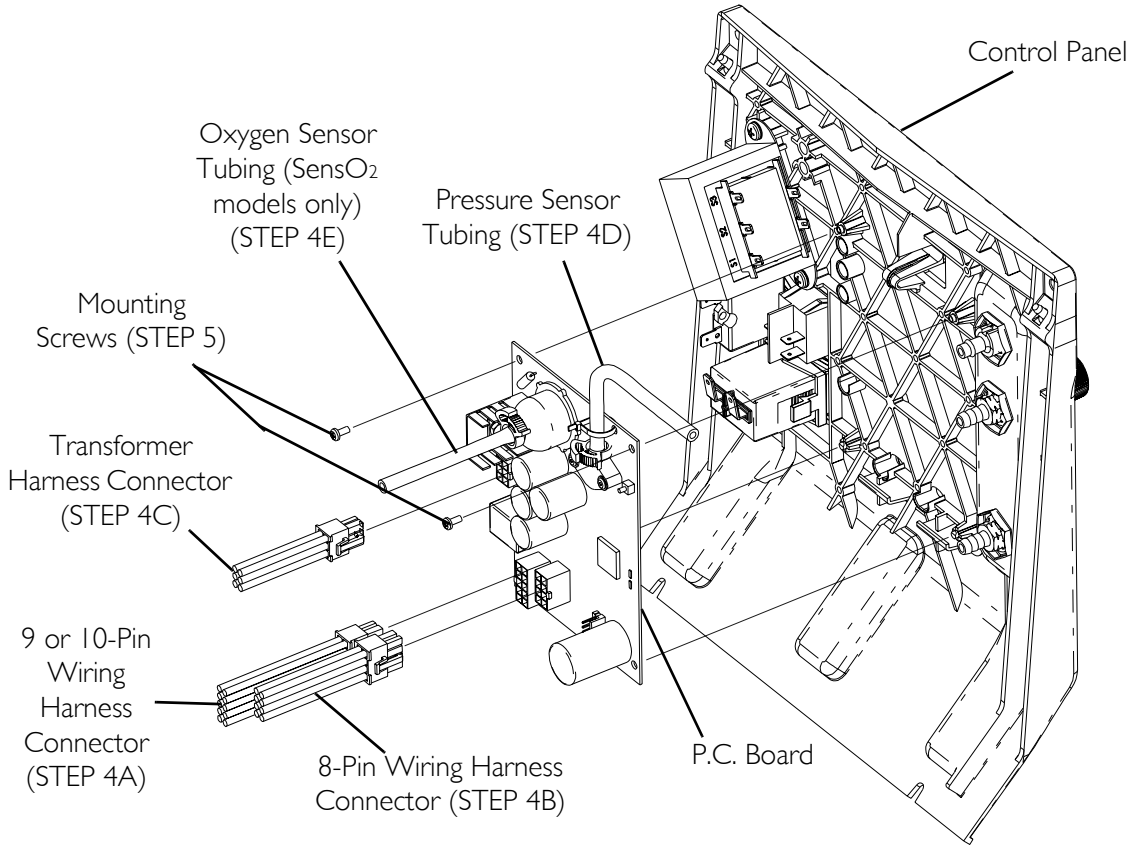

Control Panel
Oxygen Sensor Tubing (SensO2 models only) (STEP 4E)
Pressure Sensor Tubing (STEP 4D)
Mounting Screws (STEP 5)
Transformer Harness Connector (STEP 4C)
9 or 10-Pin Wiring Harness Connector (STEP 4A)
8-Pin Wiring Harness Connector (STEP 4B)
P.C. Board

FIGURE 15.1 Replacing P.C. Board

SECTION 16—TRANSFORMER

Replacing Transformer Assembly

⚠ WARNING

To prevent electrical shock, always disconnect concentrator from electrical outlet before servicing.

NOTE: For this procedure, refer to FIGURE 16.1.

1. Unplug unit.
2. Remove cabinet. Refer to Removing Cabinet on page 24.
3. Remove control panel. Refer to Removing Control Panel on page 60.
4. Locate the transformer assembly in the upper left corner on the back of control panel.
5. Unplug the transformer connector from the P.C. board.
6. Remove the two (2) keps screws that secure transformer to the back of the control panel.
7. Reverse STEPS 5-6 to install new transformer. Torque keps screw to 13.5 ± 1 inch-lbs.
8. Reinstall control panel. Refer to Control Panel on page 60.
9. Reinstall cabinet. Refer to Cabinet on page 24.

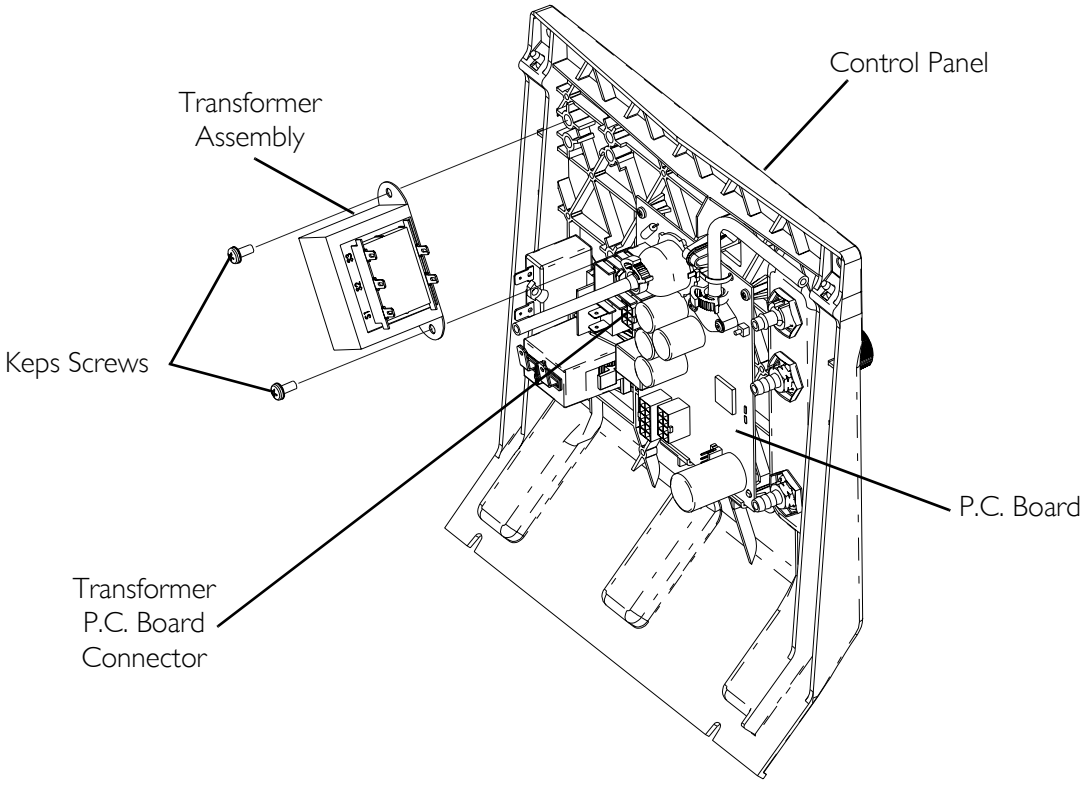


FIGURE 16.1 Replacing Transformer Assembly

SECTION 17—ON/OFF SWITCH

Replacing On/Off Switch

⚠ WARNING

To prevent electrical shock, always disconnect concentrator from electrical outlet before servicing.

NOTE: For this procedure, refer to FIGURE 17.1.

1. Unplug unit.
2. Remove cabinet. Refer to Removing Cabinet on page 24.
3. Remove control panel. Refer to Removing Control Panel on page 60.
4. Remove and code the four (4) spade connectors from back of existing on/off switch.
5. Compress retaining grips on back of existing on/off switch and push switch out through front of control panel.

NOTE: Ensure proper orientation of the On/Off (I/O) switch and wiring connections before installation. Refer to FIGURE 17.1, Detail "A" and Detail "B" below.

CAUTION

DO NOT install the On/Off (I/O) switch upside down. Universal Off (O) symbol should be at bottom and Universal On (I) symbol should be at the top. Possible damage to the concentrator may result if not properly installed.

6. Reverse STEP 4 to secure new On/Off (I/O) switch.
7. Reinstall control panel. Refer to Removing Control Panel on page 60.
8. Reinstall cabinet. Refer to Removing Cabinet on page 24.

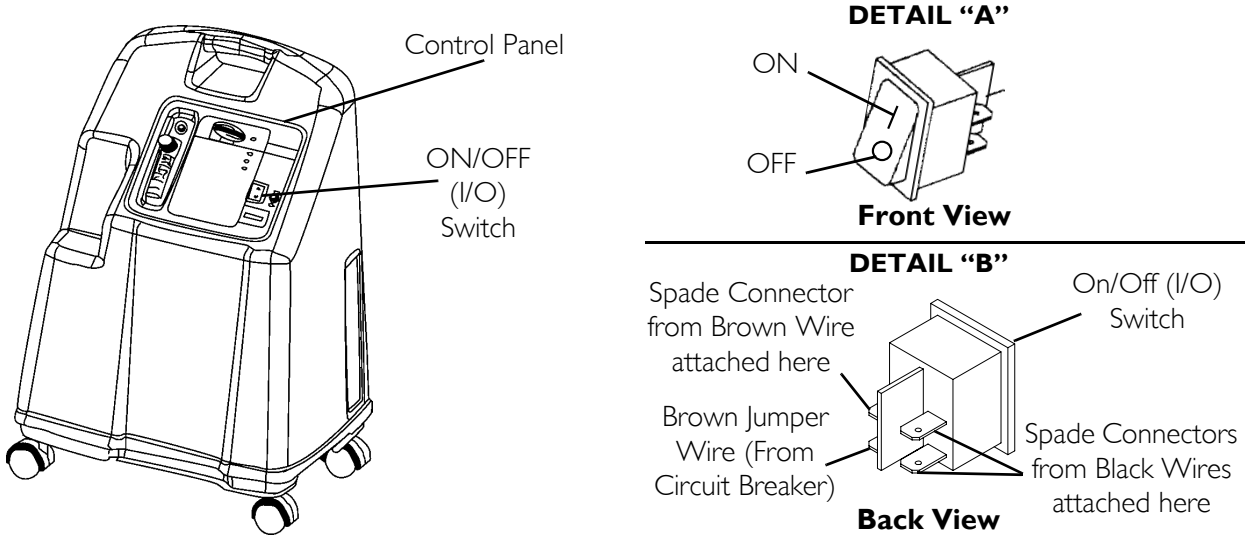


FIGURE 17.1 Replacing On/Off Switch

SECTION 18—FLOWMETER

Replacing Flowmeter

⚠ WARNING

To prevent electrical shock, always disconnect concentrator from electrical outlet before servicing.

NOTE: For this procedure, refer to FIGURE 18.1.

1. Unplug unit.
2. Remove cabinet. Refer to Removing Cabinet on page 24.
3. Remove control panel. Refer to Removing Control Panel on page 60.

NOTE: Note the location of the PVC tubing for accurate replacement after new flowmeter is installed.

4. Remove palnuts that secure flowmeter to the control panel.
5. Remove flowmeter from front of control panel.
6. Install new flowmeter reversing STEPS 4-5.
7. Reinstall control panel. Refer to Removing Control Panel on page 60.
8. Run unit and check for leaks where 1/4-inch PVC tubing engages flowmeter fittings. Refer to Leak Test on page 85.
9. Reinstall cabinet. Refer to Removing Cabinet on page 24.

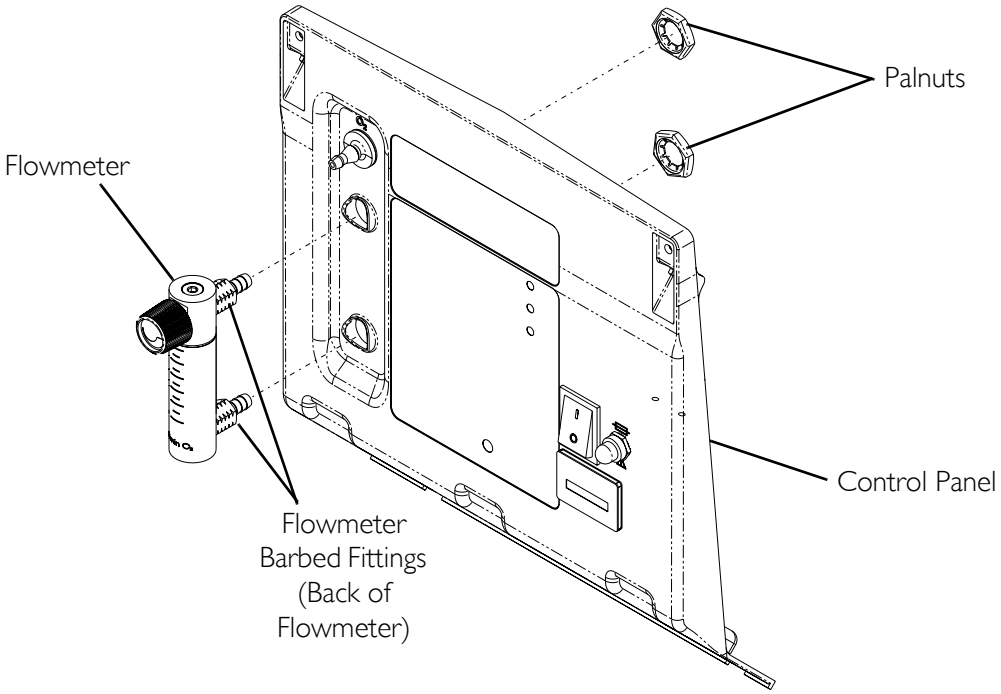


FIGURE 18.1 Replacing Flowmeter

SECTION 19—HOUR METER

Replacing Hour Meter

⚠ WARNING

To prevent electrical shock, always disconnect concentrator from electrical outlet before servicing.

NOTE: For this procedure, refer to FIGURE 19.1.

1. Unplug unit.
2. Remove cabinet. Refer to Removing Cabinet on page 24.
3. Remove control panel. Refer to Removing Control Panel on page 60.
4. Remove and code the two (2) hour meter connectors and wires connected to back of hour meter.
5. Spread retaining clips on hour meter housing that secure hour meter to control panel.
6. Remove hour meter by pushing meter through front of control panel.
7. Install new hour meter reversing STEPS 4-6.
8. Reinstall control panel. Refer to Removing Control Panel on page 60.
9. Reinstall cabinet. Refer to Removing Cabinet on page 24.

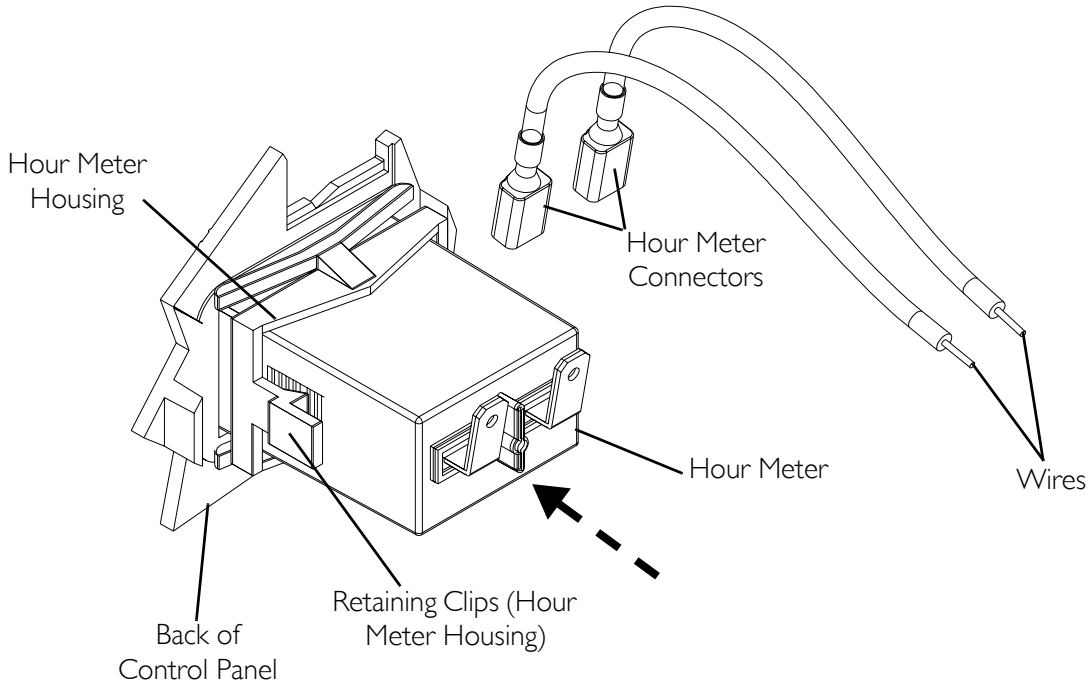


FIGURE 19.1 Replacing Hour Meter

SECTION 20— 4-WAY VALVE

⚠ WARNING

To prevent electrical shock, always disconnect concentrator from electrical outlet before servicing.

Replacing 4-Way Valve

NOTE: For this procedure, refer to FIGURE 20.1.

1. Unplug unit.
2. Remove cabinet. Refer to Removing Cabinet on page 24.
3. Remove control panel. Refer to Removing Control Panel on page 60.
4. Remove the four (4) mounting screws that secure the 4-way valve to the manifold assembly.
5. Position new 4-way valve onto manifold assembly and loosely install mounting screws through 4-way valve and into manifold assembly.

NOTE: Ensure the manifold gasket is in place on 4-way valve before installing.

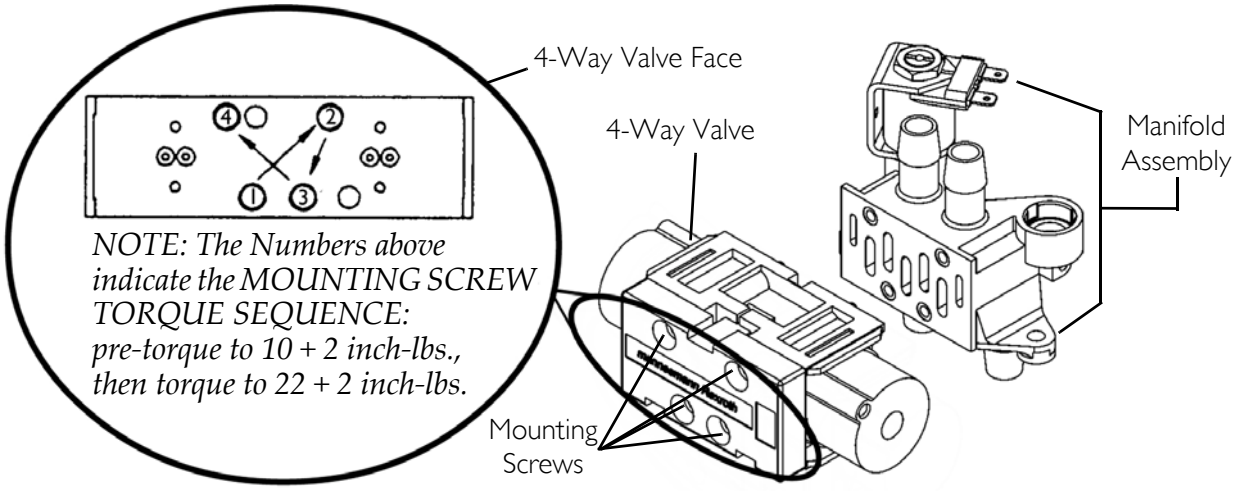
CAUTION

Torque sequence and specification MUST be adhered to or possible damage to the 4-way valve could result.

6. Tighten mounting screws in the sequence described below.
7. Pre-torque the mounting screws to 10 ± 2 inch-lbs using the torque sequence.
8. The mounting screws can be now be torqued to 22 ± 2 inch-lbs in the same sequence.

CAUTION

This is a maintenance free valve. Opening the valve will void any and all warranties applicable to the valve.


4-Way Valve Face
4-Way Valve
Manifold Assembly
NOTE: The Numbers above indicate the MOUNTING SCREW TORQUE SEQUENCE: pre-torque to 10 + 2 inch-lbs., then torque to 22 + 2 inch-lbs.
Mounting Screws

NOTE: Illustration depicts manifold assembly for Platinum 5 models. 4-Way valve is replaced in the same manner for Platinum XL and Platinum 10 models.

FIGURE 20.1 Replacing 4-Way Valve

Replacing Manifold Assembly (Units Manufactured before 7/24/03)

NOTE: For this procedure, refer to FIGURE 20.2.

NOTE: This procedure applies to Platinum 5 units manufactured before 7/24/03. Units manufactured before 7/24/03 are equipped with an exhaust canister with exhaust hose as shown in FIGURE 20.2.

Tools Required:

- Diagonal Cutters
- Flathead Screwdriver
- ¼-inch ratchet, ¼-inch socket, and ¼-inch extension
- Pliers
- Tie-wraps

1. Unplug unit.
2. Remove cabinet. Refer to Removing Cabinet on page 24.
3. Remove control panel. Refer to Removing Control Panel on page 60.
4. Cut and remove the tie-wraps connecting the sieve bed hoses to top of manifold assembly.

NOTE: When removing the sieve bed hose from the manifold assembly use a flat head screwdriver to pry hose up while simultaneously pulling the hose upward.

5. Remove sieve bed hoses from manifold assembly.
6. Remove and code the two (2) spade connectors from the valve pilot on top of the manifold assembly.

7. Remove the mounting screw(s) that secures exhaust canister assembly to rear of the sound box. Refer to Replacing the Exhaust Canister/Exhaust Muffler (Platinum 5 Models Manufactured before 7/24/03) on page 28.
8. Remove muffler from exhaust canister by turning counter-clockwise.
9. Loosen the adjustable clamp that secures valve manifold input hose to heat exchanger.

NOTE: When removing the valve manifold input hose from the heat exchanger, use a flat head screwdriver to pry hose outward while simultaneously pulling the hose outward.

10. Remove valve manifold input hose from end of heat exchanger.
11. Remove the two (2) mounting screws, washers (1 per side) and bushings (2 per side) securing the 4-way valve/manifold assembly to top of sound box.
12. The 4-way valve/manifold assembly can be removed from the concentrator by lifting the assembly straight up through the cutout in the sound box.
13. Remove 4-way valve from manifold assembly. Refer to Replacing 4-Way Valve on page 70.
14. Remove exhaust canister with hoses from manifold.
15. Loosen the adjustable clamp on valve manifold input hose to bottom center port of manifold assembly.
16. Remove valve manifold input hose from bottom center port of manifold assembly. Use screwdriver to pry at connection of tubing at barbed fitting while pulling tubing away from manifold assembly.
17. Reverse STEPS 13-16 to re-assemble.
18. Slide 4-way valve/manifold assembly complete through the cutout in top of sound box then install the two (2) mounting screws, washer and four (4) bushings into the manifold to secure the 4-way valve assembly to the top of sound box.
19. Reverse STEPS 4-10.
20. Reinstall control panel. Refer to Removing Control Panel on page 60.
21. Plug unit in and turn power on (I).
22. Run unit and check for leaks at hose connections. Refer to Leak Test on page 85.
23. Check for proper system operation. Refer to Typical Product Parameters on page 9.
24. Re-install cabinet. Refer to Removing Cabinet on page 24.

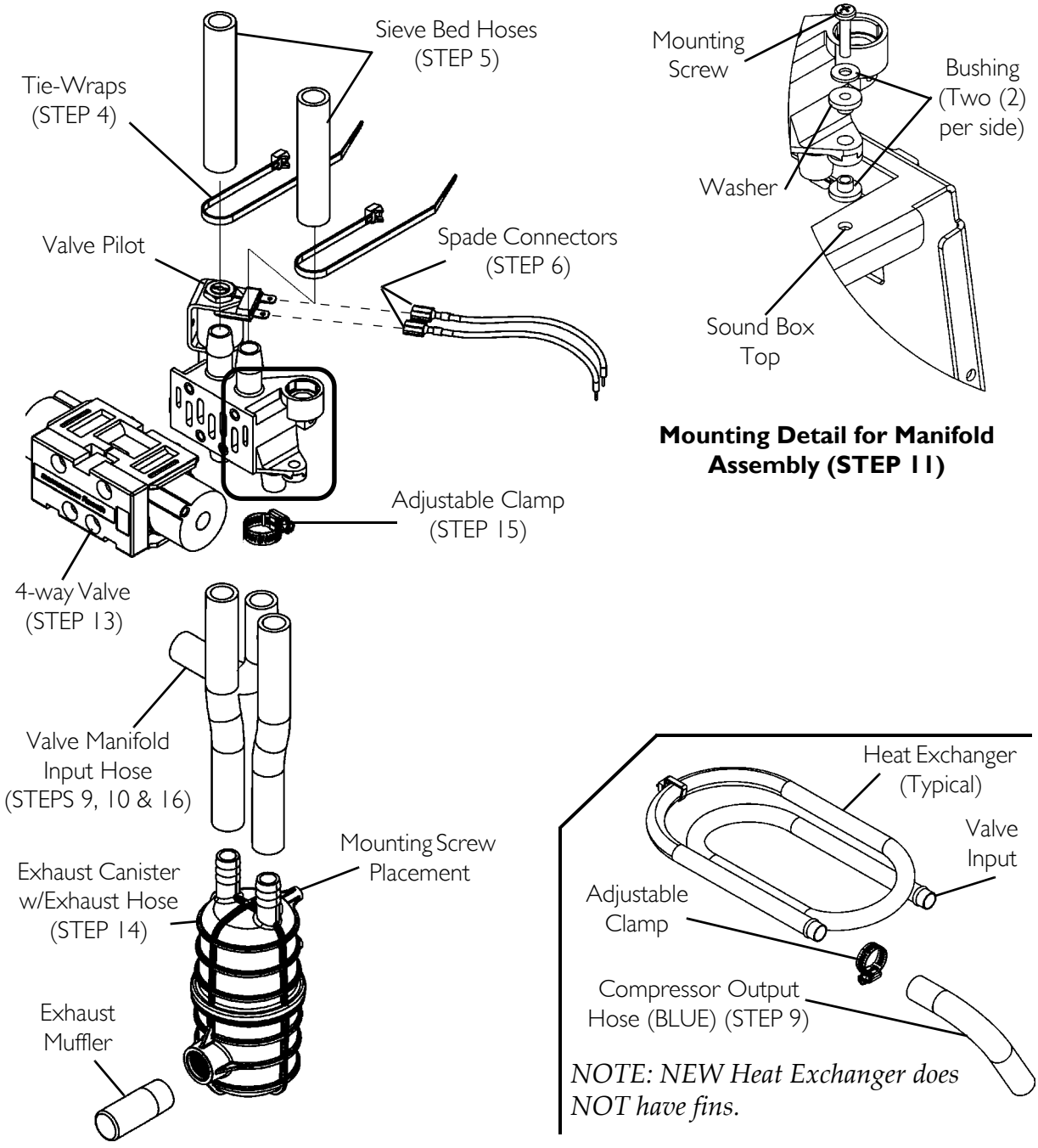


FIGURE 20.2 Replacing Manifold Assembly (Units Manufactured before 7/24/03)

Replacing Manifold Assembly (Units Manufactured after 7/24/03)

NOTE: For this procedure, refer to FIGURE 20.3 and FIGURE 20.4.

NOTE: Platinum XL and 10 Units manufactured after 7/24/03 are equipped with Y-tube muffler assembly as shown in FIGURE 20.3. This procedure applies to Platinum 5 units manufactured after 7/24/03.

Tools Required:

- Diagonal Cutters
- Flathead Screwdriver
- ¼-inch ratchet, ¼-inch socket, and ¼-inch extension
- Pliers
- Tie-wraps

1. Unplug unit.
2. Remove cabinet. Refer to Removing Cabinet on page 24.
3. Remove control panel. Refer to Removing Control Panel on page 60.
4. Cut and remove the tie-wraps connecting the sieve bed hoses to top of manifold assembly.

NOTE: When removing the sieve bed hose from the manifold assembly, use a flat head screwdriver to pry hose up while simultaneously pulling the hose upward.

5. Remove sieve bed hoses from manifold assembly.
6. Remove the two (2) spade connectors from the valve pilot on top of the manifold assembly.
7. Loosen the adjustable clamp that secures valve manifold input hose to heat exchanger.

NOTE: When removing the valve manifold input hose from the heat exchanger, use a flat head screwdriver to pry hose outward while simultaneously pulling the hose outward.

8. Remove valve manifold input hose from end of heat exchanger.
9. Remove the two (2) mounting screws, washers (one [1] per side) and bushings (two [2] per side) securing the 4-way valve/manifold assembly to top of sound box (Detail "A" of FIGURE 20.3).
10. Remove the 4-way valve/manifold assembly from the concentrator by lifting the assembly straight up through the cutout in the sound box.
11. Loosen the adjustable clamp on valve manifold input hose to bottom center port of manifold assembly.

NOTE: Note orientation of valve manifold input hose to Y-tube muffler assembly. It is imperative that this input hose be installed in the same orientation in order to connect to the heat exchanger.

12. Remove valve manifold input hose from bottom center port of manifold assembly. Use screwdriver to loosen the connection of the tubing at barbed fitting while pulling tubing away from manifold assembly.

13. Cut the tie-wraps that secure the Y-tube muffler assembly to the manifold assembly.
14. Remove the Y-tube muffler assembly from the manifold assembly. Use a screwdriver to disengage the tubing connection at the barbed fitting while pulling the tubing away from the manifold assembly.

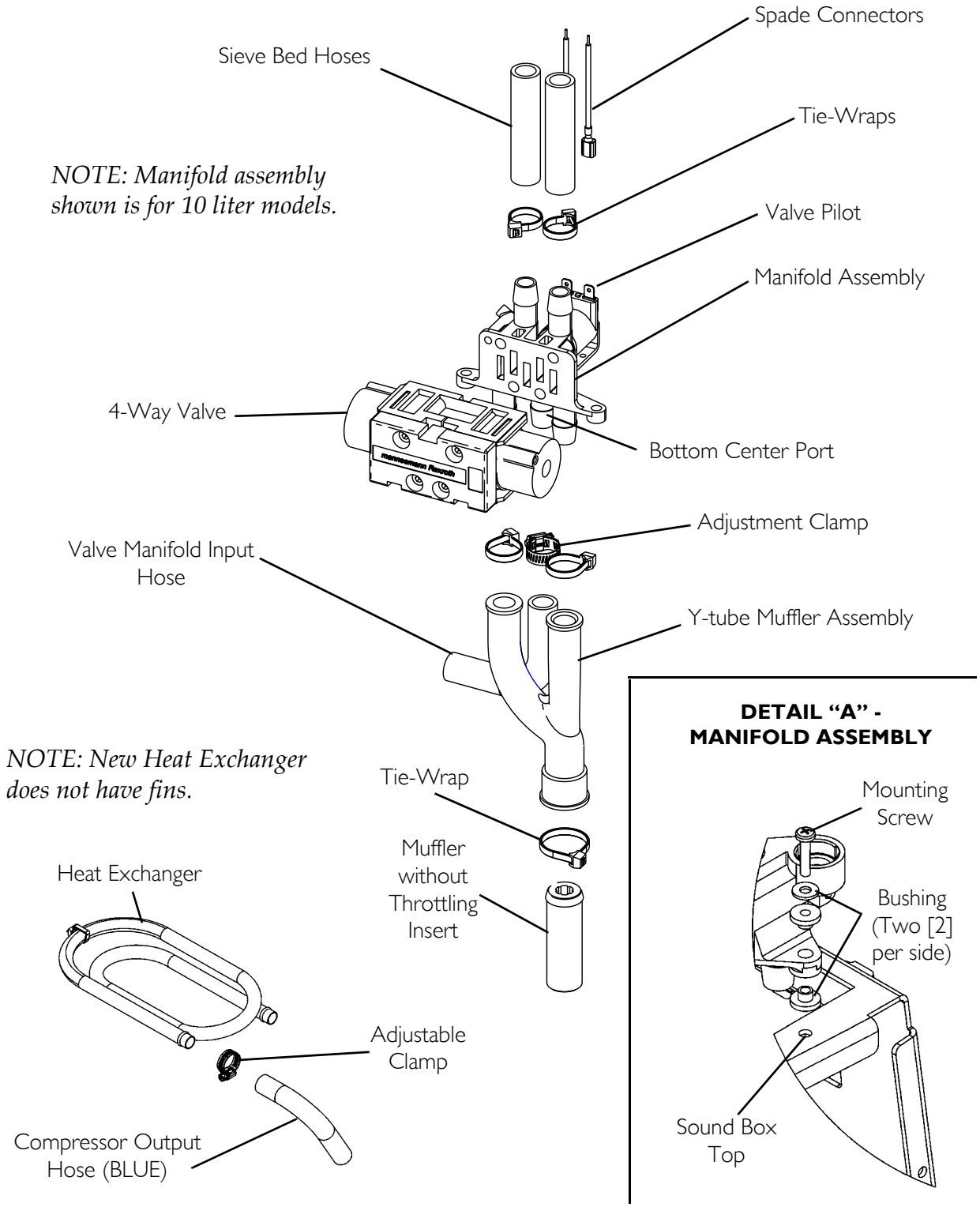


FIGURE 20.3 Replacing Manifold Assembly (Units Manufactured after 7/24/03)

15. Replace the manifold assembly by performing the following:
    A. Remove the four (4) mounting screws that secure the 4-way valve to the existing manifold assembly.
    B. Separate the two (2) components and discard existing manifold assembly.
    C. Position existing 4-way valve onto new manifold assembly and loosely install mounting screws through 4-way valve and into manifold assembly.

CAUTION

Torque sequence and specification MUST be adhered to or possible damage to the 4-way valve could result.

    D. Pre-torque the mounting screws to 10 ± 2 inch-lbs using the torque sequence (FIGURE 20.4).
    E. The mounting screws can be now be torqued to 22 ± 2 inch-lbs in the same sequence.

CAUTION

DO NOT attempt to perform any maintenance on the 4-way valve. This is a maintenance-free valve. Opening the valve will void any and all warranties applicable to the valve.

16. On the Y-tube assembly, check the muffler and replace if necessary. Refer to Replacing the Exhaust Canister/Exhaust Muffler (Platinum 5 Models Manufactured before 7/24/03) on page 28.
17. Install Y-tube muffler assembly onto bottom of manifold assembly.
18. Install one (1) tie wrap on each leg of the Y-tube muffler assembly to secure in place.
19. Install valve manifold input hose onto bottom center port of manifold assembly in the orientation noted previously.
20. Secure valve manifold input hose with adjustable clamp.
21. Slide 4-way valve/manifold assembly complete through the cutout in top of sound box then install the two (2) mounting screws, washer and bushings into the manifold to secure the 4-way valve assembly to the top of sound box.
22. Install valve manifold input hose onto end of heat exchanger and secure in place with adjustable clamp.
23. Connect the two (2) spade connectors to the valve pilot on top of the manifold assembly.
24. Connect sieve bed hoses to manifold assembly and secure in place with tie wrap.
25. Reinstall control panel. Refer to Removing Control Panel on page 60.
26. Plug unit in and turn power on (I).
27. Run unit and check for leaks at hose connections. Refer to Leak Test on page 85.

28. Check for proper system operation. Refer to Typical Product Parameters on page 9.
29. Re-install cabinet. Refer to Removing Cabinet on page 24.

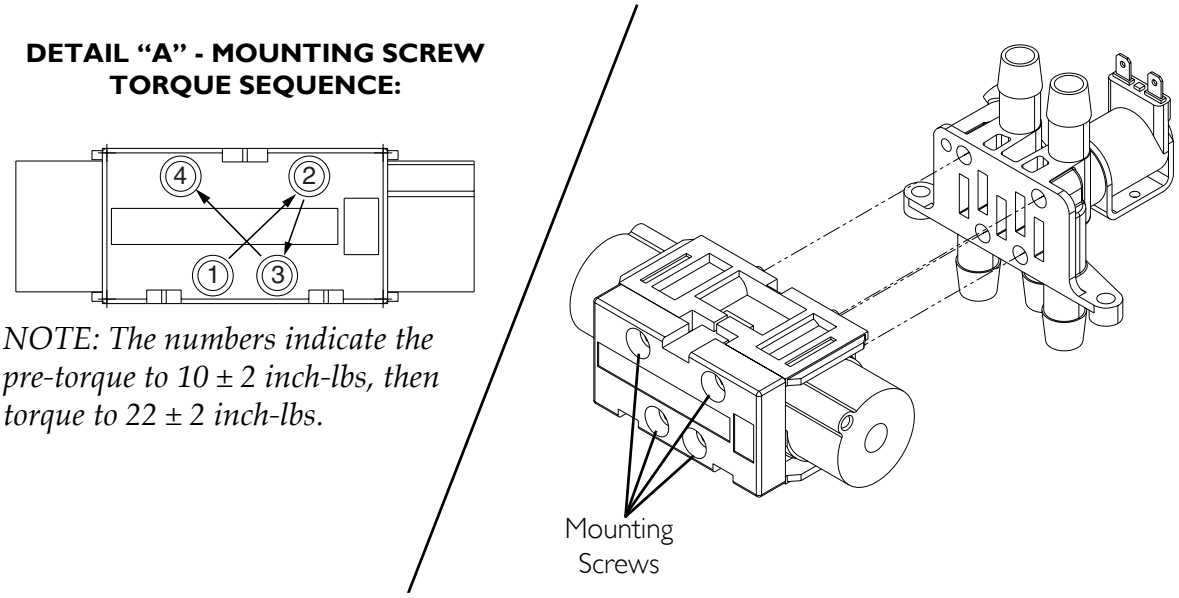

DETAIL "A" - MOUNTING SCREW TORQUE SEQUENCE:
4
2
1
3
NOTE: The numbers indicate the pre-torque to 10 ± 2 inch-lbs, then torque to 22 ± 2 inch-lbs.
Mounting Screws

FIGURE 20.4 Replacing Manifold Assembly (Units Manufactured after 7/24/03)

Replacing Pilot Valve Poppets and O-Rings

⚠ WARNING

To prevent electrical shock, always disconnect concentrator from electrical outlet before servicing.

NOTE: For this procedure, refer to FIGURE 20.5.

1. Unplug unit.
2. Remove cabinet. Refer to Cabinet on page 24.
3. Remove control panel. Refer to Removing Control Panel on page 60.
4. Locate pilot valve on 4-way valve manifold assembly.

NOTE: Pilot valve can be accessed while the 4-way valve and sieve bed hoses are intact on the concentrator.

5. Hold pilot valve stem with the flat blade screwdriver and turn the 9/16-inch locknut counterclockwise one (1) complete turn.
6. Unscrew the pilot valve stem assembly from the manifold while leaving the coil with yoke and locknut intact on stem.
7. Remove pilot valve poppet from inside the pilot valve stem.

CAUTION

DO NOT remove the coil yoke from the coil. The washer between the bottom of the yoke and the bottom of the coil MUST not be removed. Otherwise, components may be damaged in reassembly.

8. Set aside the coil with yoke and pilot valve stem assembly with the wires still intact.

⚠ WARNING

DO NOT use sharp tools to remove O-ring from plastic manifold opening. Damage to the plastic manifold and/or plastic manifold airflow passage may occur. Damage to airflow may result in improper oxygen delivery and harm to the user. Refer to Detail "A" in FIGURE 20.5.

9. Remove poppet and O-ring from manifold opening (Detail "A").
10. Discard old poppet and O-ring.
11. Install new O-ring into the opening in the plastic manifold housing (Detail "A").

CAUTION

DO NOT overtighten pilot valve stem when installing it into plastic manifold. Damage to the rubber "O" ring and/or plastic manifold may occur.

12. Install new slotted poppet into the bottom of the pilot valve stem with tapered end facing to the bottom.
13. Install pilot valve stem and new slotted poppet with coil (with yoke and locknut intact) into manifold opening.
14. Use a flat blade screwdriver, and tighten pilot valve stem clockwise until snug. Torque to 25 inch-lbs. ± 5 inch-lbs.
15. Install new label onto pilot valve coil yoke.

NOTE: DO NOT remove spade connectors from pilot valve coils. Simply lay coils with spade connectors aside while performing this installation.

16. Position pilot valve coil with yoke at an approximate 60° angle to the right (as viewed from the front of valve) to ensure spade connectors are not pulled or tensioned after reinstallation.
17. Use the flat blade screwdriver and hold the pilot valve-stem in place.
18. Tighten locknut clockwise with the 9/16-inch wrench until snug to secure the stem and coil with yoke. DO NOT overtighten. Torque to 20 inch-lbs ± 3 inch-lbs.

CAUTION

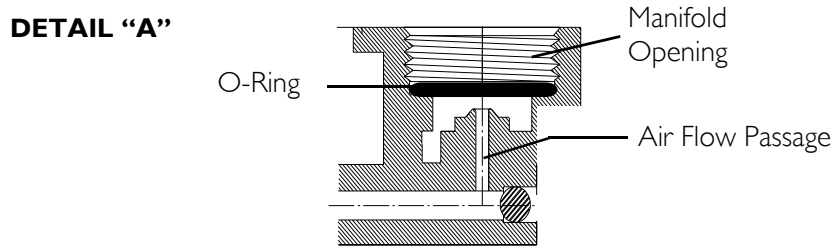
DO NOT overtighten locknut when installing it onto pilot valve stem. Damage to the plastic manifold may occur.

19. Reinstall control panel. Refer to Removing Control Panel on page 61.

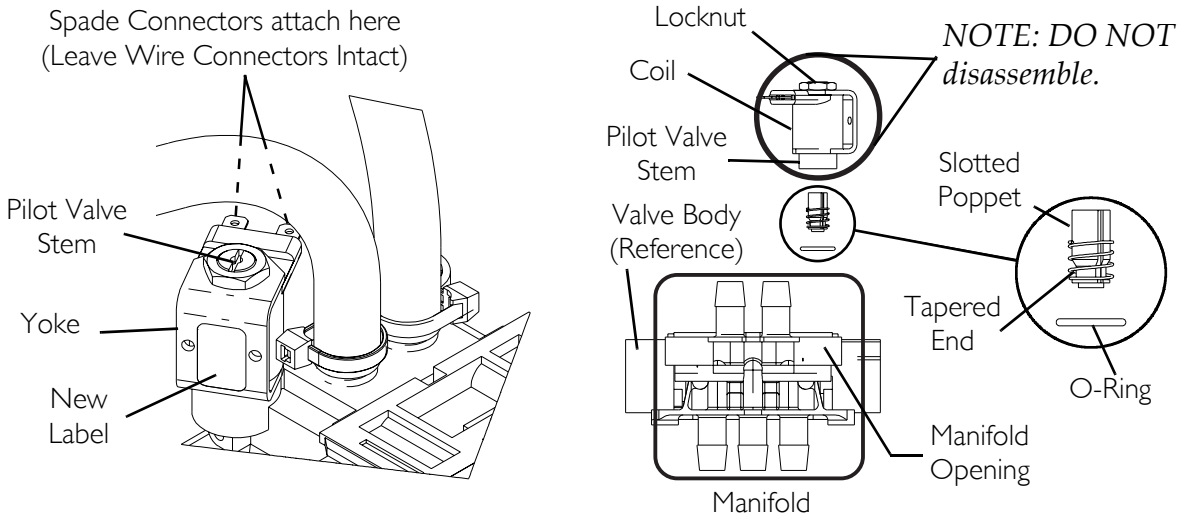
⚠ WARNING

Ensure that hoses behind control panel DO NOT contact cooling fan after control panel reinstallation.

20. Plug power cord in and turn concentrator ON (I) to ensure proper operation.
21. Reinstall cabinet. Refer to Removing Cabinet on page 24.
22. If any difficulties are encountered in this installation, contact Invacare Technical Service at (800) 832-4707.



Platinum 5 and XL Models



Platinum 10 Models

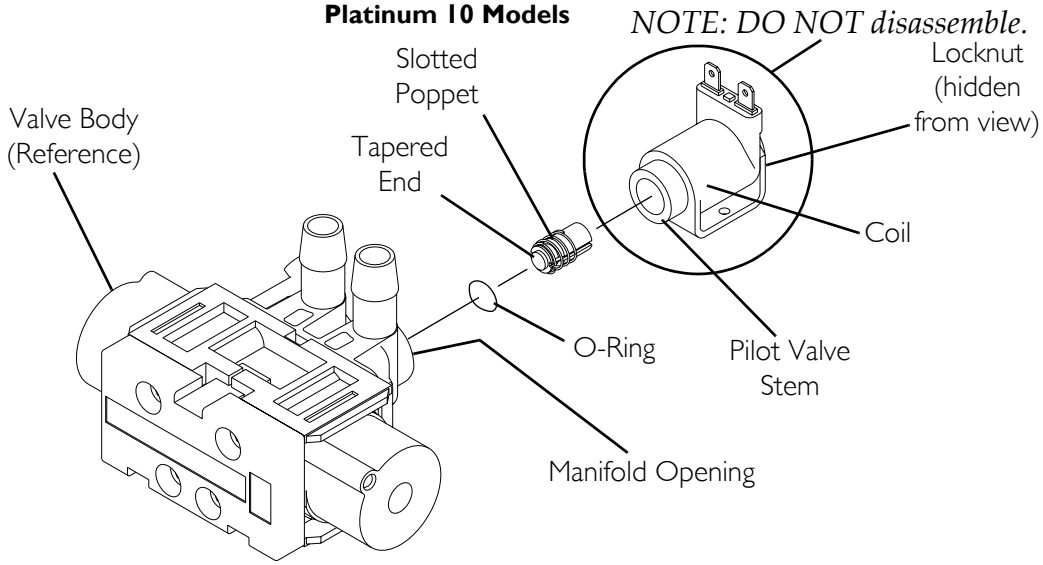


FIGURE 20.5 Replacing Pilot Valve Poppets and O-Rings

SECTION 21—PURITY INDICATORS

SensO$_2$ Alarm Indicators

⚠ WARNING

To prevent electrical shock, always disconnect concentrator from electrical outlet before servicing.

NOTE: For this procedure, refer to FIGURE 21.1 and FIGURE 21.2.

Operation

The Platinum with SensO$_2$ Concentrator is equipped with an oxygen purity indicator. This feature monitors the purity level of the oxygen generated by the concentrator. If purity falls below alarm thresholds, indicator lights on the control panel will illuminate.

NOTE: Concentrator may be used during the initial start warm-up time (approximately 30 minutes) while waiting for the O_2 purity to reach maximum.

When the unit is turned on, the GREEN light will come on (SYSTEM OK/O_2 greater than 85%). After five (5) minutes, the oxygen sensor will be operating normally and will control the indicator lights depending on oxygen concentration values. The explanation of the indicator light functions are as follows:

Indicator Lights

NOTE: Indicator lights are visible only when lit.

GREEN light (O_2) - Normal Operation.

YELLOW light **(⚠)** - Call supplier IMMEDIATELY. You may continue to use the concentrator unless instructed otherwise by your supplier. Be certain that backup oxygen is nearby.

RED light **(🔔)** - Total unit shutdown. Switch IMMEDIATELY to backup oxygen supply. Call supplier IMMEDIATELY.

GREEN light - with YELLOW light flashing - Call supplier IMMEDIATELY. Oxygen sensor malfunctioning; you may continue to use the concentrator.

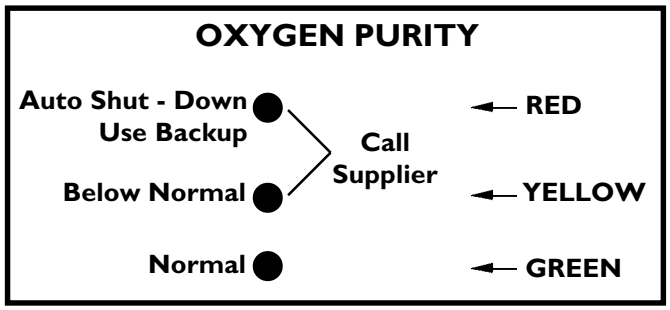


FIGURE 21.1 Indicator Lights

Indicators - If your unit does not feature the O_2 Sensor

LX Models Indicator Light Explanation

RED light **(** 🔔 **)** - Total Unit Shut-Down. Switch IMMEDIATELY to a back-up oxygen supply. Call Supplier IMMEDIATELY.

GREEN light (I/O)- ON/OFF. System okay.

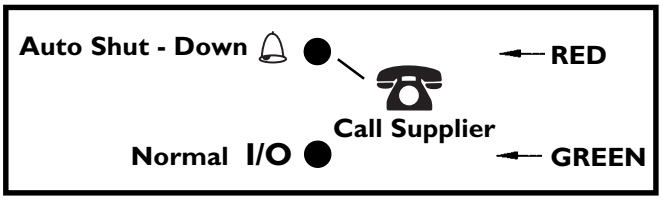


FIGURE 21.2 Display Control Panel

SECTION 22—TIMING

Timing the Platinum 5, XL, and 10 Concentrators

⚠ WARNING

To prevent electrical shock, always disconnect concentrator from electrical outlet before servicing.

Use extreme care when making adjustments to the timing switch. DO NOT allow screwdriver or your hands to contact the P.C. Board when unit is plugged in and/or on. Turn unit off and unplug before adjusting timing switch. Electrical shock is possible.

To accommodate the varying tolerances when replacing components, an adjustable timer is used to control the shift time of the pressure equalization (P.E.) valve. The $SensO_2$ board allows for automatic (microprocessor controlled) adjustments of the P.E. shift times. Non-$SensO_2$ boards allow for manual adjustment.

Autotuning

NOTE: For this procedure, refer to FIGURE 22.1.

1. Turn power off (O) and unplug the unit.
2. Remove cabinet. Refer to Removing Cabinet on page 24.
3. Plug the unit in and turn the power on (I).
4. Wait for the main valve shift to indicate one (1) of the following:
   - If the board is new, the front panel RED indicator light will slowly blink, indicating autotune has initiated.
   - If the board is used and has performed autotuning before, press and release the small push button switch near the pressure sensor.
   - The front panel RED indicator light will slowly blink, indicating the unit is autotuning and automatically adjusting the P.E. valve timing.
5. Set the output flow to 5.0 L/min. for 5 liter models and 10 L/min. for 10 liter model during autotuning.
6. The GREEN (onboard) diagnostic light will flash the current value of the P.E. valve timing number.
7. Place the cover back on the unit but DO NOT install the cover screws. Let the unit run until autotuning is completed.
8. When autotuning is complete, the RED front panel indicator light will change from a slow blinking to a flashing of the final P.E. valve timing number.

9. Turn the unit off and then back on. The timing value is stored in memory for future use.
10. If the unit is turned off before an autotune cycle is completed, the P.E. valve timing will not be stored or updated. If the board is new, autotuning must be successfully completed before the unit can be placed into service.
11. After a successful autotune, run the unit for 30 minutes and verify that the oxygen concentration output of the unit is within specification.
12. If the oxygen output concentration is not within specification, rerun the autotune again.
13. Reinstall the cover screws.

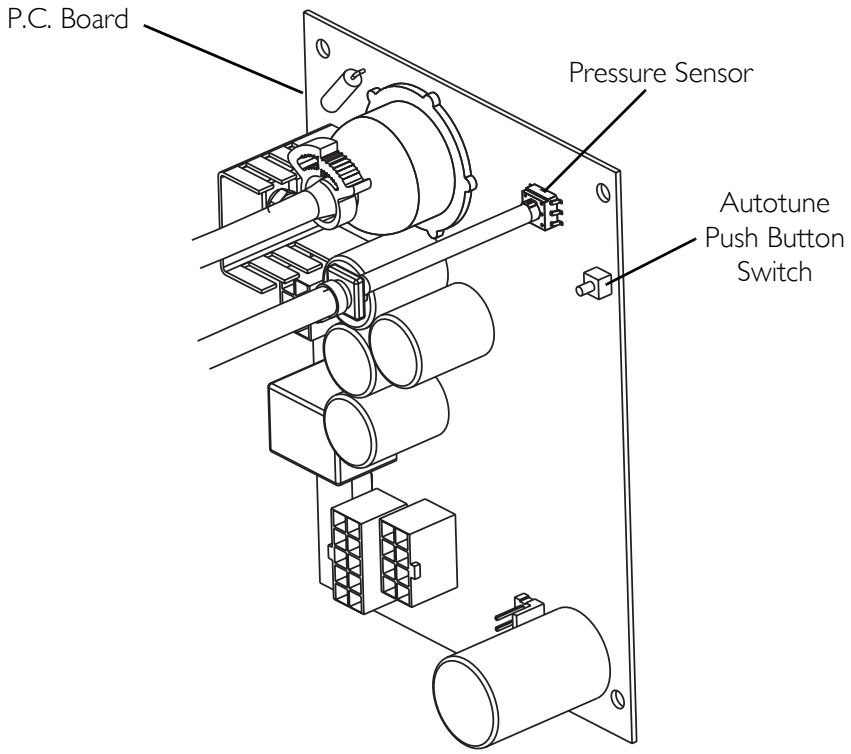


FIGURE 22.1 Autotuning

Manual Tuning

NOTE: For this procedure, refer to FIGURE 22.2.

1. Turn power off (O) and unplug the unit.
2. Remove cabinet. Refer to Removing Cabinet on page 24.
3. Plug unit in but DO NOT turn on (I) until instructed to below.
4. Locate the timing switch on the upper right corner of the P.C. board near the pressure sensor.
5. Insert a small common or flathead screwdriver into the adjustment screw of the timing switch.
6. Set the timing switch initially at the number "7" position.
7. Turn unit on (I) and wait 15 minutes for unit to stabilize.
8. If after 15 minutes of run time the concentration is below specification, change setting to a number one (1) position lower than the previous setting.
9. Let unit run ten (10) minutes. If concentration is lower still, change the switch to number two (2) positions higher.

NOTE: You will find that the concentrator will perform better at either the higher or lower setting. The normal adjustment range is between timing positions 3 and A.

10. Continue to change setting one (1) step at a time (up or down) until the concentration is the highest value achievable.
11. Once concentration has reached specification, retiming is complete.
12. Reinstall cabinet. Refer to Removing Cabinet on page 24.

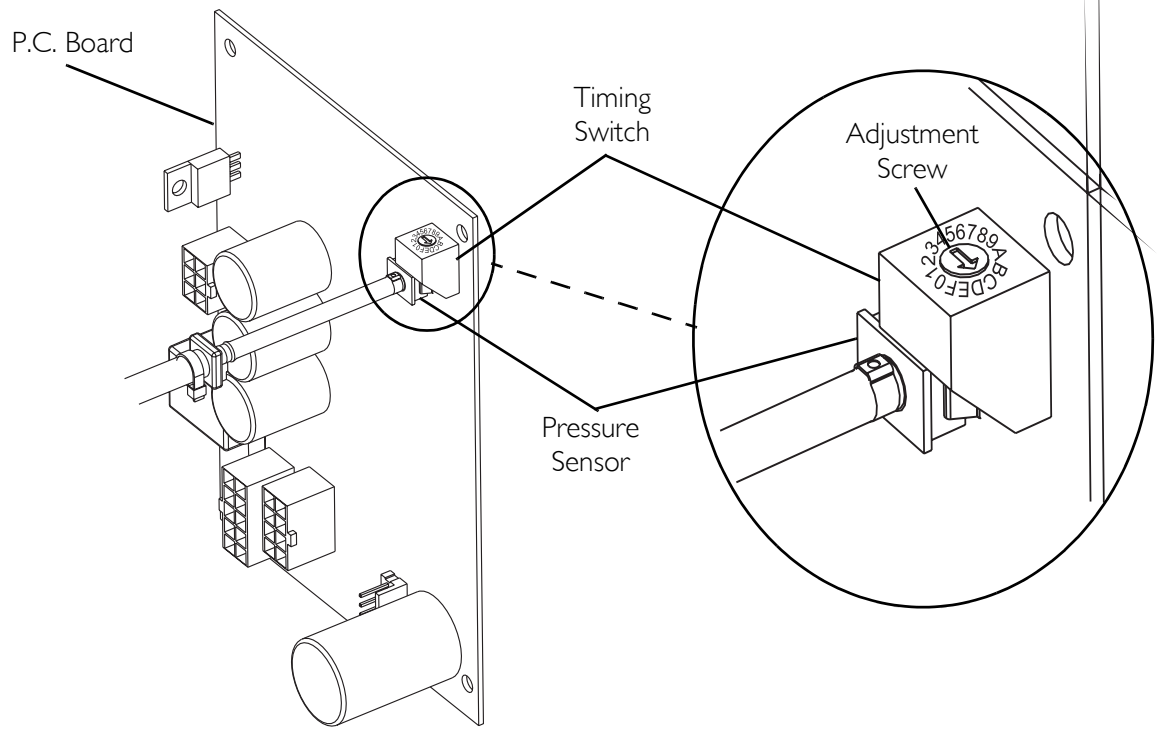


FIGURE 22.2 Manual Tuning

SECTION 23—LEAK TEST

⚠ WARNING

To prevent electrical shock, always disconnect concentrator from electrical outlet before servicing.

Leak Test

NOTE: For this procedure, refer to FIGURE 23.1.

1. Unplug unit.
2. Remove cabinet. Refer to Removing Cabinet on page 24.
3. Plug in unit.
4. Turn the concentrator on (I).
5. Let concentrator run for 20 minutes.

⚠ WARNING

Apply small amount of leak test solution to fittings only. Avoid all other components. DO NOT leak test 4-way valve body. Carefully leak test for pressure leaks around sieve bed hoses at 4-way valve. DO NOT allow leak test solution to enter into 4-way valve and system.

6. With "leak-test" solution or equivalent soapy water, leak test the following:
   A. The two (2) sieve bed hoses at the top of 4-way valve and hose to bottom center port on 4-way valve (Detail "A").

   NOTE: Refer to Preventive Maintenance on page 25 for maintenance of heat exchanger and filters.

   B. Hose connections to top and bottom fittings of sieve beds.
   C. P.E. valve hose connections on top of sieve beds (Detail "B").
   D. Hose fittings at product tank cap and check valves (Detail "B").
   E. The front and rear fittings on heat exchanger (Detail "C").
7. Replace any tubing that appears cracked, worn, etc.
8. Re-install cabinet. Refer to Removing Cabinet on page 24.
9. Refer to Typical Product Parameters on page 9 for concentration levels. If low concentrations are observed, refer to Troubleshooting on page 17.

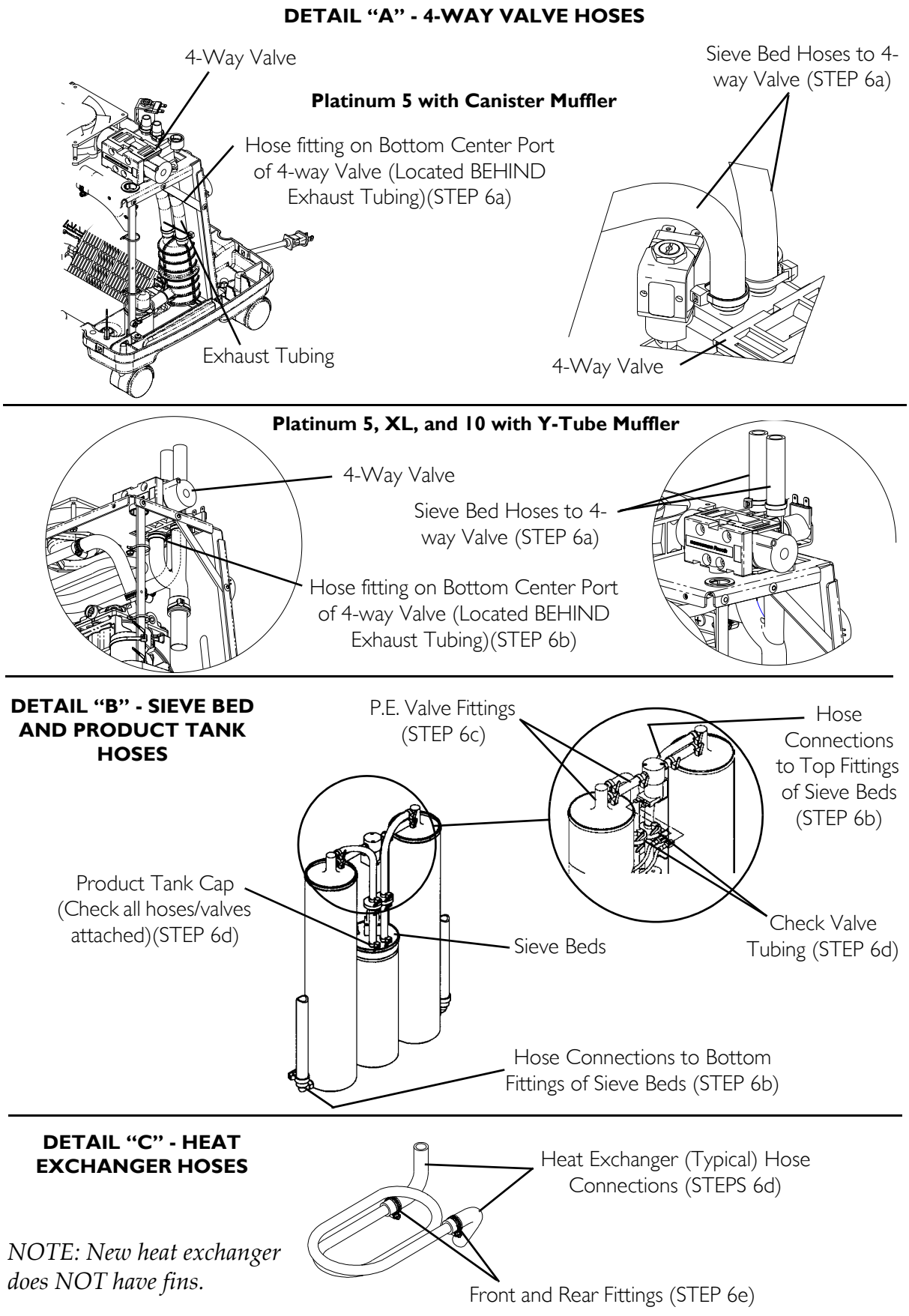

DETAIL "A" - 4-WAY VALVE HOSES
4-Way Valve
Platinum 5 with Canister Muffler
Hose fitting on Bottom Center Port of 4-way Valve (Located BEHIND Exhaust Tubing)(STEP 6a)
Exhaust Tubing
Sieve Bed Hoses to 4-way Valve (STEP 6a)
4-Way Valve
Platinum 5, XL, and 10 with Y-Tube Muffler
4-Way Valve
Sieve Bed Hoses to 4-way Valve (STEP 6a)
Hose fitting on Bottom Center Port of 4-way Valve (Located BEHIND Exhaust Tubing)(STEP 6b)
DETAIL "B" - SIEVE BED AND PRODUCT TANK HOSES
P.E. Valve Fittings (STEP 6c)
Hose Connections to Top Fittings of Sieve Beds (STEP 6b)
Product Tank Cap (Check all hoses/valves attached)(STEP 6d)
Sieve Beds
Check Valve Tubing (STEP 6d)
Hose Connections to Bottom Fittings of Sieve Beds (STEP 6b)
DETAIL "C" - HEAT EXCHANGER HOSES
Heat Exchanger (Typical) Hose Connections (STEPS 6d)
NOTE: New heat exchanger does NOT have fins.
Front and Rear Fittings (STEP 6e)

FIGURE 23.1 Leak Test - Heat Exchanger Hoses

SECTION 24— ALARM TEST

Alarm and Sensor Tests

⚠ WARNING

To prevent electrical shock, always disconnect concentrator from electrical outlet before servicing.

Check alarms periodically for proper function.

Power Loss Alarm

With the unit running, remove the line cord from power source. The power loss alarm mode should sound the audible alarm immediately or within 30 seconds.

NOTE: With the unit unplugged and inoperable for a short period of time, the battery free circuit will be drained. If power failure alarm does not sound with unit unplugged and power switch on, the battery free circuit is drained. It will recharge when unit is plugged in and switched on.

Low Pressure Test

NOTE: For this procedure, refer to FIGURE 24.1.

1. There are two (2) separate failure modes for Low Pressure:
   - Low product tank pressure. (Pressure in tank drops below a preset value, typically 7 p.s.i for 5 liter and 14 p.s.i for 10 liter).
   - Failure to reach the set point pressure within a prescribed time limit, or Timeout Failure.

Test One

1. With unit running, set flow at maximum rating.
2. When the main valve switches, pull the stem on the compressor relief valve out as far as it will go and hold it.
3. The low pressure alarm should activate within 30 seconds. Refer to Indicators on page 90 for shutdown mode.

Test Two

1. With unit running, set flow at maximum rating.
2. Remove the pressure sensor tubing (tie-wrap) from the top of the product tank (not shown).
3. The low pressure alarm should activate within 30 seconds. Refer to Indicators on page 90 for shutdown mode.
4. Replace tubing and tie wrap.

Time-Out Test

NOTE: For this procedure, refer to FIGURE 24.1.

1. With unit off (O), disconnect the compressor connector from the main wiring harness.
2. Plug unit in and turn power on (I).
3. The Time-Out Failure alarm should activate within 40 seconds. Refer to Indicators on page 90 for shutdown mode.
4. Replace tubing and tie wrap.

NOTE: If any alarm fails to perform to specification, contact Invacare Technical Service.

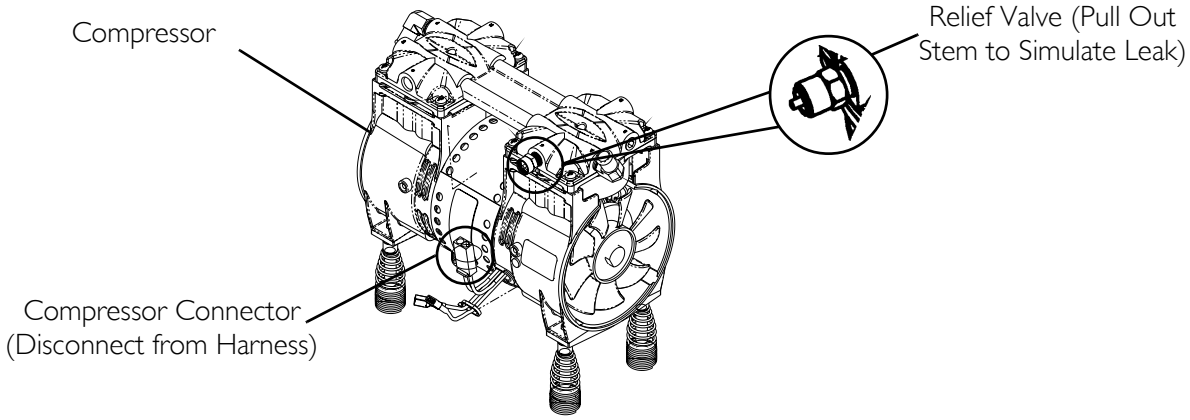


FIGURE 24.1 Low Pressure Test - Time-Out Test

High Pressure Test

NOTE: For this procedure, refer to FIGURE 24.2.

- High Pressure - Occurs when pressure in product tank rises beyond a preset value, typically 23 p.s.i. ± 1 p.s.i. for 5 liter and 27 p.s.i. ± 1 p.s.i. for 10 liter.
- Main Valve Coil - Alarm sequence occurs when the main valve coil, connection or P.C. board circuitry has failed.

1. With the unit running and flow set at 5 L/min., remove one (1) orange wire from the main valve coil.
2. The main valve coil alarm should activate within 40 seconds. Refer to Indicators on page 90 for shutdown mode (FIGURE 24.2).
3. Replace tubing and tie wrap.

NOTE: If any alarm fails to perform to specification, contact Invacare Technical Service.

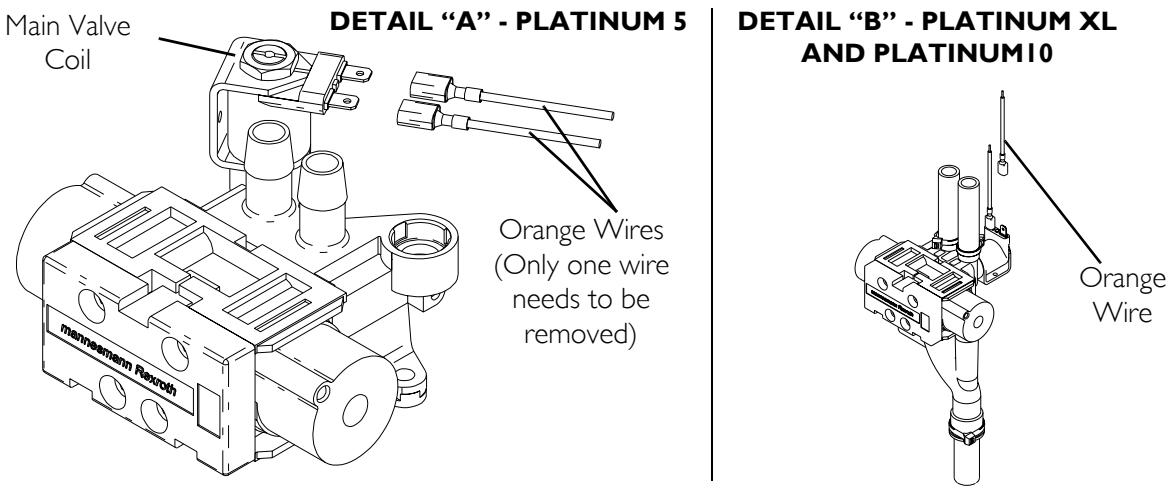

Main Valve Coil
DETAIL "A" - PLATINUM 5
Orange Wires (Only one wire needs to be removed)
mannesmann Rexroth
DETAIL "B" - PLATINUM XL AND PLATINUM10
Orange Wire

FIGURE 24.2 High Pressure Test

Oxygen Sensor

NOTE: For this procedure, refer to FIGURE 24.3.

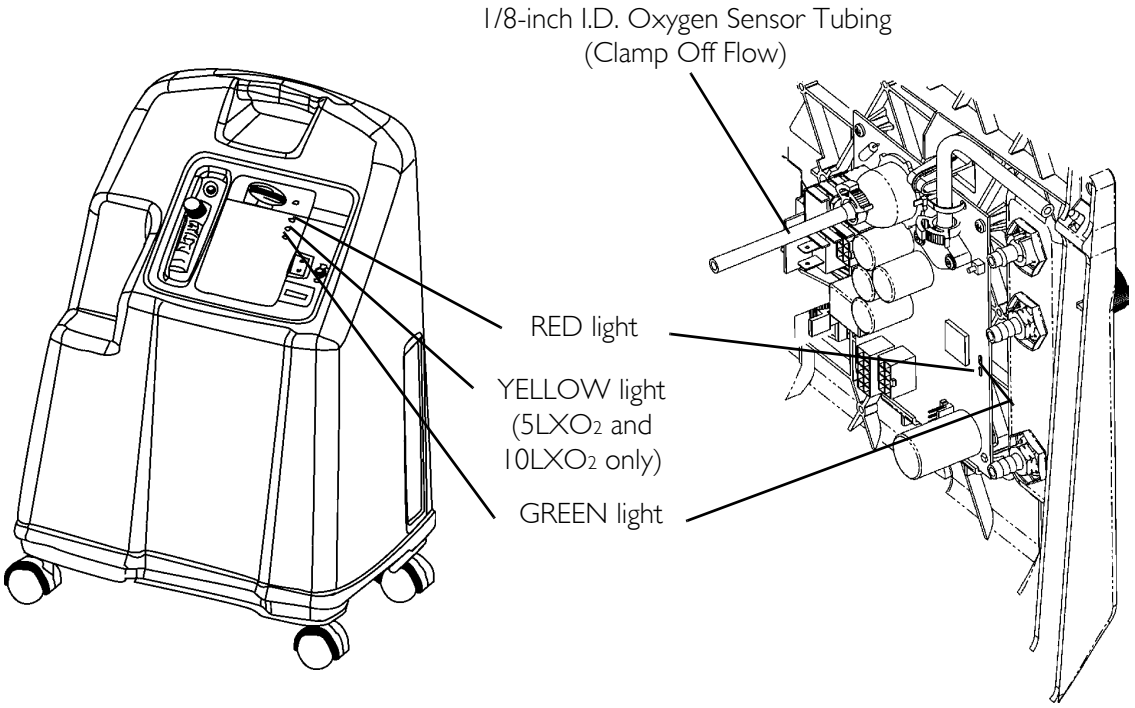
Alarm sequence occurs when concentration levels fall below a preset value, typically 73% ± 3% or 85% ± 2%. This failure indicates a catastrophic failure of any component mechanical or electrical.

1. Turn unit on (I). Set output flow at 5 L/min for 5 liter units and 10 L/min. for 10 liter units.
2. Monitor the O_2 level.
3. With the O_2 level greater than 85% after five (5) minutes, the GREEN panel indicator light will remain illuminated.
4. Slowly adjust flow beyond maximum rated flow until you can achieve a concentration level greater than 75% but less than 84%. Within 30 minutes the YELLOW panel indicator light will illuminate and the unit will continue to run.
5. Clamp off the 1/8-inch oxygen sensor tubing between the oxygen sensor and the product tank regulator.

⚠ WARNING

Use care not to cut oxygen sensor tubing when clamping the oxygen sensor tubing.

6. Within 30 minutes, the Oxygen Sensor Alarm should activate and the RED panel light indicator will illuminate. The compressor will shut down with the alarm.



INDICATORS

SensO_2 Alarm Threshold

Label Symbol	Status	Indicator Lights	
O_2	SYSTEM OKAY O_2 Over 85% (± 2%)	**GREEN**	Indicator Light
⚠	O_2 Between 73% (± 3%) to 85% (± 2%)	**YELLOW**	A. Yellow Solid B. Yellow Flashing-Sensor Failure *Call Qualified Service Personnel!
🔔	SYSTEM FAILURE O_2 Below 73% (± 3%)	**RED**	Continuous Audible Alarm Sieve-GARD™ Compressor Shutdown *Call Qualified Service Personnel!

FIGURE 24.3 Oxygen Sensor

P.E. Valve Coil Test

NOTE: For this procedure, refer to FIGURE 24.4.

NOTE: P.E. Valve Coil - Alarm sequence occurs when the P.E. Valve Coil, connection or P.C. Board Circuitry has failed.

1. With the unit running and flow set at 5 L/min., remove one (1) YELLOW wire from the P.E. valve coil. The P.E. valve coil alarm should activate within 10 seconds.
2. Reinstall cabinet. Refer to Removing Cabinet on page 24.

NOTE: If any alarm fails to perform to specification, contact Invacare Technical Service.

NOTE: If problems arise during test, contact Invacare Technical Service for further assistance.

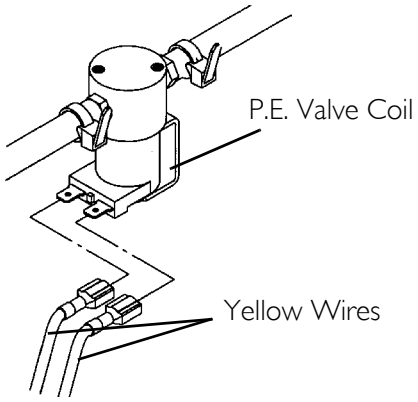


FIGURE 24.4 P.E. Valve Coil Test

Use the chart in Preventive Maintenance on page 30 to record date and number of hours when preventive maintenance was performed on the concentrator, or any repairs made.

OXYGEN CONCENTRATOR
Refer To Service Manual
DIAGNOSTIC ALARM SYSTEM

...ADJUSTMENTS BY UNAUTHORIZED PERSONNEL VOIDS WARRANTY...

ALARM	LED FLASHES RED	LED FLASHES GREEN	PROBABLE CAUSE
BEEP AT START UP	0	0	NO PROBLEM, SYSTEM OK
SHORT BEEP WITH LONG PAUSE	0	0	MAIN POWER LOSS
CONTINUOUS	1	1	LOW PRESSURE; MAJOR LEAK
CONTINUOUS	1	2	HIGH PRESSURE; NO SWITCHING
CONTINUOUS	1	3	TIME OUT FAILURE; COMPRESSOR
CONTINUOUS	1	5	PILOT VALVE CIRCUIT
CONTINUOUS	2	1	73% SHUTDOWN; LOW O_2
CONTINUOUS	2	3	PE VALVE COIL
CONTINUOUS	2	4	EEPROM FAILURE
CONTINUOUS	3	1	OXYGEN SENSOR FAILURE

NOTE: CYCLE POWER ON AND OFF FIVE (5) TIMES TO CLEAR INTERNAL FAULT CODE.

PREVENTIVE MAINTENANCE SCHEDULE

1115180

Cabinet Filter(s)	Clean Weekly, Replace as Needed
Heat Exchanger	Clean as Needed
Compressor Inlet Filter	Check Annually or During Scheduled PM
Outlet HEPA Filter	Check Annually or During Scheduled PM
Compressor	Rebuild as Needed
Exhaust Muffler	Replace as Needed

SECTION 25— SIEVE BED PRESSURE CHECK

Installing the Sieve Bed Pressure Tap-In Kit Installation and Checking Bed Pressure

⚠ WARNING

To prevent electrical shock, always disconnect concentrator from electrical outlet before servicing.

Disassembly

NOTE: For this procedure, refer to FIGURE 25.1.

1. Turn power off (O) and unplug unit.
2. Remove cabinet. Refer to Removing Cabinet on page 24.
3. Turn unit so the back faces you.
4. Loosen and lower the adjustable clamp on the product tank.
5. Pull product tank up and back to access the check valve PVC tubing.
6. Locate the check valve and PVC tubing to your right.
7. Cut the PVC tubing below the check valve in half.

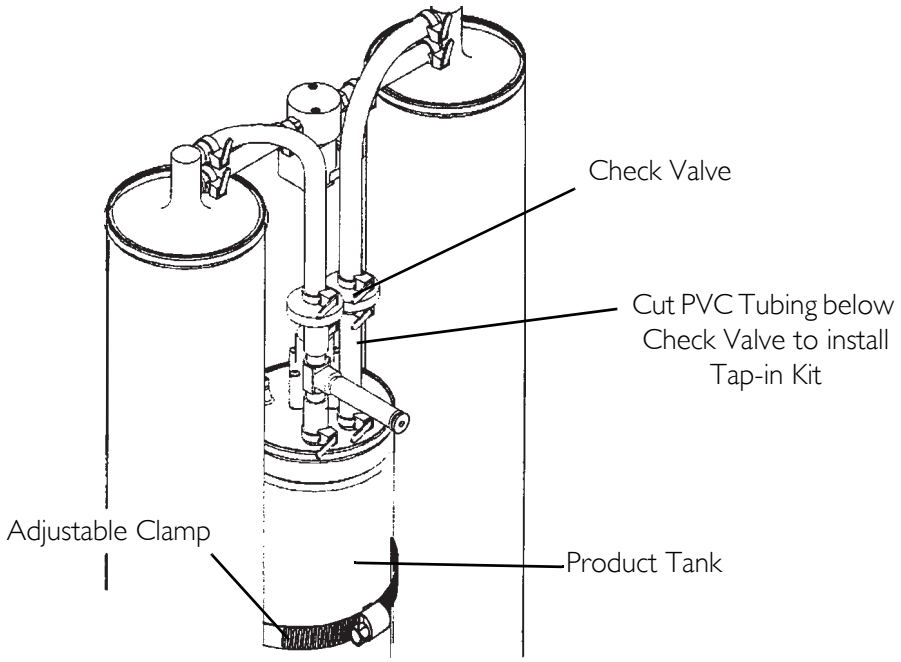


FIGURE 25.1 Disassembly

Installation

NOTE: For this procedure, refer to FIGURE 25.2.

1. Insert the "T" fitting into the ends of the PVC tubing.
2. Secure ¼-inch clamps to each end of the PVC tubing “T” fitting connection.
3. Attach the ¼ x 2-inch silicone tubing to the new “T” fitting and secure with a ¼-inch clamp.
4. Insert plug into the open end of the ¼ x 2-inch silicone tubing.
5. Secure with a ¼-inch clamp.

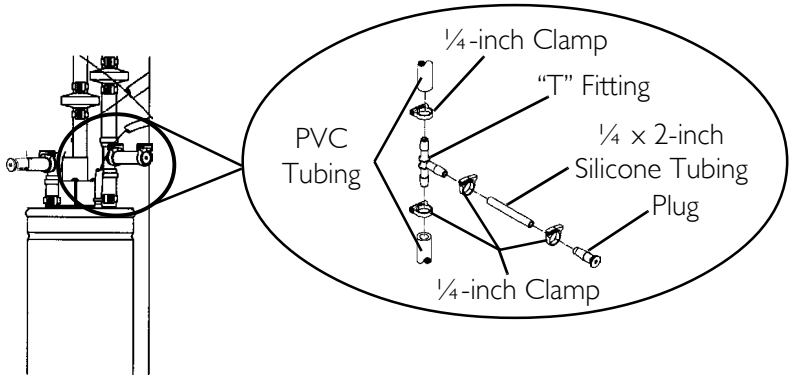


FIGURE 25.2 Installation

Pressure Testing

NOTE: For this procedure, refer to FIGURE 25.3.

1. Remove plug and connect pressure gauge to the ¼ x 2-inch silicone tubing and secure with a ¼-inch clamp.
2. Check each connection to make sure it is tight.
3. Turn the concentrator On (I).

NOTE: Adjust the concentrator to MAXIMUM Rated liter flow (5 L/min. for 5 liter models and 10 L/min. for 10 liter models)

NOTE: Wait approximately five (5) minutes to allow system pressures to achieve proper equilibrium before testing.

4. The pressure in the concentrator should rise within 20 seconds to 21 p.s.i.g. ± 0.3 for 5 liter models (25 p.s.i.g. for 10 liter models) and shift the 4-way valve to the opposite sieve bed.
5. After the 4-way valve shift, the pressure in the concentrator will drop to 14 p.s.i.g. ± 2 before rising within 20 seconds to 21 p.s.i.g. ± 0.3 for 5 liter models (25 p.s.i.g. for 10 liter models) and shift the 4-way valve to the opposite sieve bed.
6. If pressure reading is 21 p.s.i.g. ± 0.3 for 5 liter models (25 p.s.i.g. for 10 liter models) when both valve shifts are made, proceed to STEP 8.

7. If pressure in the concentrator does not fall into the specifications listed above, refer to Troubleshooting on page 17.
8. Turn the concentrator off (O).
9. Unclamp the pressure gauge and remove it from the "T" fitting.

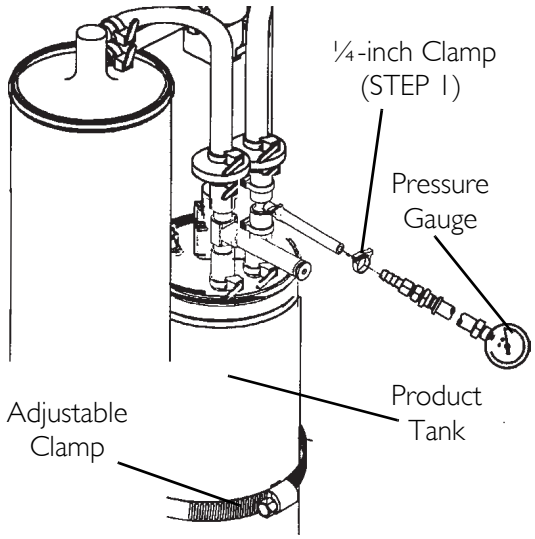


FIGURE 25.3 Pressure Testing

After Testing

NOTE: For this procedure, refer to FIGURE 25.4.

1. Insert ¼-inch plug and ¼ x 2-inch silicone tubing onto the "T" fitting and secure with ¼-inch clamp.
2. Reinstall the cabinet. Refer to Removing Cabinet on page 24.

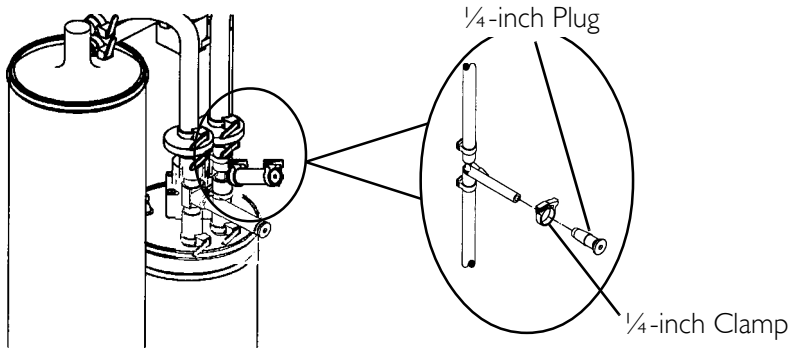


FIGURE 25.4 After Testing

LIMITED WARRANTY

NOTE: THE WARRANTY BELOW HAS BEEN DRAFTED TO COMPLY WITH FEDERAL LAW APPLICABLE TO PRODUCTS MANUFACTURED AFTER JULY 4, 1975.

This warranty is extended only to original purchaser of our products.This warranty gives you specific legal rights and you may also have other legal rights which may vary from state to state.

Invacare Corporation warrants its Platinum Oxygen Concentrator to be free from defects in materials and workmanship from date of purchase:

Platinum 5 and XL for a period of five (5) years

Platinum 10 for a period of three (3) years

The 4-way valve body carries a lifetime warranty from date of purchase. DO NOT OPEN OR ATTEMPT TO SERVICE VALVE BODY. This will void any and all warranty applicable to the valve body. If within such warranty period any such product shall be proven to Invacare Corporation's satisfaction to be defective, such product shall be repaired or replaced, at Invacare Corporation's option. This warranty only applies to the labor for repairs performed by the Invacare Service Department or Invacare Authorized Service Centers. It does not apply to the labor performed by the purchaser or user. This warranty does not include normal wear and tear or shipping charges. Invacare Corporation's sole obligation and your exclusive remedy under this warranty shall be limited to such repair or replacement. Routine maintenance items, such as filters, are excluded from this warranty.

For warranty service, please contact Invacare Corporation's Service Department at the toll free number on the back cover.

Upon receiving notice of an alleged defect in a product, Invacare Corporation will issue a serialized return authorization. It shall then be the responsibility of the purchaser to return the entire unit or remove, at purchaser's cost, the defective component part(s) identified, pack the component part(s) in a manner to avoid shipping damage and to ship the component part(s) to either Invacare Corporation's plant or service center as specified by Invacare Corporation in advance. Defective component part(s) must be returned for warranty inspection using the serial number as identification within thirty (30) days of return authorization date. Do not return products to our factory without prior consent. C.O.D. shipments will be refused; please prepay shipping charges.

LIMITATIONS AND EXCLUSIONS: THE FOREGOING WARRANTY SHALL NOT APPLY TO PRODUCTS SUBJECTED TO NEGLIGENCE, ACCIDENT, IMPROPER OPERATION, MAINTENANCE OR STORAGE, SOOT OR SMOKE-FILLED ENVIRONMENTS, OR OTHER THAN NORMAL APPLICATION, USE OR SERVICE, OR TO PRODUCTS MODIFIED WITHOUT INVACARE CORPORATION'S EXPRESS WRITTEN CONSENT (INCLUDING, BUT NOT LIMITED TO, MODIFICATION THROUGH THE USE OF UNAUTHORIZED PARTS OR ATTACHMENTS) OR TO PRODUCTS DAMAGED BY REASON OF REPAIRS MADE TO ANY COMPONENT WITHOUT THE SPECIFIC CONSENT OF INVACARE CORPORATION OR TO PRODUCTS DAMAGED BY CIRCUMSTANCES BEYOND INVACARE CORPORATION'S CONTROL.

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THIS WARRANTY SHALL BE EXTENDED TO COMPLY WITH STATE/PROVINCIAL LAWS AND REQUIREMENTS.

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